CROOKES AND THE SPIRIT WORLD

A collection of writings by or concerning the work of Sir William Crooks O.M., F.R.S., in the field of psychical research

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Taplinger Publishing Company New York

First published in the United States in 1972 by

TAPLINGER PUBLISHING CO., INC.
New York.

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Printed in Great Britain

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Library of Congress Catalog Card Number : 78-185949

ISBN 0-8008-**20**40-1

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FOREWORD

Some ten years ago Dr. George Medhurst started collecting and collating the works of Sir William Crookes in the field of psychical research. Dr. Medhurst's knowledge of the Victorian Spiritualist scene was prodigious, and it is to his industry as a researcher that we owe some of the most interesting items in this volume.

He welcomed the opportunity of bringing the works of this most celebrated of psychical researchers before a wider public, and though he was suffering from the after-effects of a major brain operation when the project was mooted he set to work considering which material should be selected.

Tragically, his illness recurred, and knowing he could not live for much longer he handed over the responsibility for completing the editorial work to us; we dedicate this volume to his memory.

M. R. BARRINGTON

K. M. GOLDNEY

April 1971

GENERAL INTRODUCTION

SIR WILLIAM CROOKES, O.M., F.R.S. (1832-1919), was one of the most outstanding figures of the nineteenth century.1 Although he had no university training and little school education of a regular kind, scientific honours were heaped upon him. He was elected a Fellow of the Royal Society in 1863 at the early age of thirty-one and became its President in 1913. He was also President of many other learned societies through his long scientific career : indeed, his scientific achievements and honours were Ear too numerous to catalogue here. Not only was he the discoverer and promoter of scientific advances particularly associated with his name, but his fertile brain suggested a large number of hypotheses later to be followed up and brought to fruition by others. Seldom can there have been a scientist whose interests ranged over a wider area, as can be seen in his own words in his article *Psychic Force and Modern Spiritualism: A Reply to the Quarterly Review* (December 1871). His position in the scientific world is assured and unquestioned.

But it is otherwise in the world of psychical research. Crookes's collection of writings concerning psychical phenomena, collected together in his famous book *Researches in the Phenomena of Spiritualism,2* range from his reports of the experiments he conducted with that most famous of all physical mediums, D. D. Home, in the laboratory in his own house, to the incredible accounts of his séances with the young medium Florence Cook and the materialised form "Katie King" allegedly appearing at these sittings. It is surely the most extraordinary book in the literature of psychical research Let me first quote from it some statements of his own and then some testimony concerning him. Says Crookes :

"My whole scientific education has been one long lesson in exactness of observation, and I wish it to be distinctly understood-

> that this firm conviction [regarding the validity of the physical phenomena which he had investigated] is the result of most careful investigation."

And in his much later Presidential Address to the British Association in 1896 Crookes roundly adhered to *all* his earlier testimony in this field, stating:

> "I have nothing to retract. I adhere to my already published statements. I regret only a certain crudity in those early expositions which, no doubt justly, militated against their acceptance by the scientific world."

An eminent chemist of the period, a disbeliever in the claims of Spiritualism, wrote concerning Crookes's experiments :

> "Either a new and most extraordinary natural force has been discovered, or some very eminent men specially trained in rigid physical investigation have been the victims of a most marvellous, unprecedented and inexplicable physical delusion. I say unprecedented because, although we have records of many popular delusions of similar kind and equal magnitude, and speculative delusions among the learned, I can cite no instance of skilful experimental experts being utterly egregiously and repeatedly deceived by the mechanical action of experimental test apparatus carefully constructed and used by themselves."

And Professor Challis, of Cambridge, wrote :

> "In short, the testimony has been so abundant and consentaneous, that either the facts must be admitted to be such as are reported, or the possibility of certifying facts by human testimony must be given up."

How comes it then that there can be few if any leading Psychical researchers today who, I reckon, would give unqualified belief to *all* Crookes's claims? Is there, I wonder, a single researcher of repute in the Society for Psychical Research who would credit Crookes's own account of the materialised Katie King?

> "Relating some of the bitter experiences of her past life, now smiling with all the innocence of happy girlhood when she

had collected my children round her, and was amusing them by recounting anecdotes of her adventures in India"*

Yet this occasion is stated by Crookes to have taken place in his **own** home where he had invited Florrie to stay "remaining sometimes a week at a time", in order to guard against any possibility of accomplices or deception. How well we can echo the words of Sir Oliver Lodge : "It is almost as difficult to resist the testimony as it is to accept the things testified. [113]

One might argue that if denizens of the spirit world have these powers of materialisation and chatting with us so readily, how comes it there has been no reputable report of their exercis**ing** these powers (with the help of the large staffs of mediums which have been maintained by leading Spiritualist societies) during the passage of nearly 100 years since the heyday of Crookes and Katie King?—years, be it noted (perhaps significantly) during which aids to and methods of investigation have considerably improved. Indeed, can we not also feel sure that, **had** it been possible, former leaders of the SPR who devoted their lives on earth to furthering psychical knowledge—Hodg**son,** Myers, Lodge, Gurney, et al.—can we not feel sure they would certainly have carried those efforts forward in the spirit world and have demonstrated to their SPR successors, if only in a minor way, the marvels of materialisation which filled the pages of Spiritualist journals in the days of Crookes? The whole scene was reported in great detail by the late Dr. Medhurst and myself.[4] All students of the subject should make a point of reading those journals *(The Spiritualist; The Medium and Daybreak; Light)* and compare them with the scene today. How to explain the contrast?

One writer, Trevor H. Hall, has put forward the theory5 that Crookes was having an illicit love affair with Florence Cook and that though he well knew she was fraudulent, he backed her up to shield her reputation and because of his emotional entanglement with her. Dr. Robert Thouless has pointed out the "extreme weakness of the evidence" for such a theory and its "highly improbable charge that Crookes so violated his principles as a scientist that he became an accessory to her fraud".6

***Katie King stated that in her earlier earth life she was Annie Owen Morgan, daughter of Sir Henry Owen Morgan, the buccaneer, knighted by Charles U and appointed Governor of Jamaica.**

Those interested may care to read Dr. Thouless's review of the book in question and the writer's rejoinders.[7] Moreover, Crookes was known to be very devoted to his wife throughout his life. Is it likely that he would choose to bring a young mistress, well over twenty years younger than himself, into his own home under his wife's nose—and she was pregnant at the time—when, supposing this accusation were true, attending her sittings would have given him such an excellent alibi for an "affair". Further, when Florrie suddenly married a young man more her own age in 1874 and became Mrs. Corner, Crookes's correspondence shows that he continued on the friendliest terms with them both, and sittings with Florrie continued in Crookes's home for several months thereafter, her husband being present on occasions as well. No; I agree with Dr. Thouless in rejecting this surmise. We must look for another proposition in our efforts to resolve this extraordinary story.

Reading the *Researches* one can divide its contents into roughly three sections : the first gives Crookes's writings between July 1870 and December 1871, and deals with his experiments with D. D. Home and the arguments to which this led between Crookes and some scientific opponents. The second section is a survey covering the years up to 1874 in which the names of D. D. Home and Kate Fox are prominent. Then comes the section dealing with Florence Cook and Katie King, described in Crookes's reports dated February and June 1874. Later editions include part of Crookes's Address to the British Association in 1898, nearly a quarter of a century later, in which he declares he has *"nothing* to retract" (my italics) from his earlier testimony.

It will be seen that the section dealing with Florence Cook's mediumship is not so detailed as are the descriptions of earlier experiments with Home and others. Crookes writes "Spiritualism amongst its more devout followers is a religion. The mediums ... are guarded with a seclusion and jealousy which an outsider can penetrate with difficulty ... they seem to hold the presence of scientific investigation as a profanation of the shrine." Although, as we have seen, Crookes was able in due course to take Florrie into his own home in his efforts to ensure adequate experimental conditions, any investigator of more recent times will bear witness to the extent to which investigations

of physical mediums are subject to the dictates of the medium's Control and his/her Spiritualist devotees.* Crookes says of his experiments in general that they have taken place "in the light except where darkness is essential to the phenomena" and sittings for materialisation obviously would not have admitted of the same degree of "light" as Crookes had obtained elsewhere.

Another famous researcher, Professor Charles Richet, the renowned French physiologist, wrote that it was "an actual pain" to him—a materialist—"an intellectual effort that is really painful"—to have to admit the reality of the phenomena of materialisation.[8] Other scientists besides Richet, whose personal experiences resulted in acceptance of the reality of forces beyond those recognised by science, may have been similarly "bowled over". Though Crookes would seem to have had a much more open mind to such possibilities than Richet, could not his experiments with Home have swung the pendulum of his hitherto strictly scientific outlook too far in the direction of a readiness to believe in psychical wonders? Is it not a tenable theory that the result so far as Katie King is concerned might have been delusion? That Crookes was indeed deluded in his ultimate beliefs regarding the materialised "Katie King" seems to me the most likely hypothesis in a story where each surmise in turn has its formidable drawbacks. Let me quote from Dr. Medhurst's and my report[9] (p. 147)

> "Was Crookes duped? ... Were Crookes, Richet, and all the numerous otherwise competent scientists who attested similar phenomena, taken in by tricksters? Or are we to believe that they, and we, in approaching the phenomena of psychical research cross over an 'enchanted boundary' postulated by Dr. W. F. Prince in a very different sense, in which we suffer hallucinations unmatched elsewhere in the domain of the sane, and become veritably bewitched?"

Crookes's reports of his experiments are frequently inadequate by today's standards. He was a vain, egocentric man and took

• A notable exception was the medium Rudi Schneider. I know of no instance where he objected to any experimental set-up or even demanded to **know** beforehand what this was to be. Naturally he relied upon the experimenters to maintain adequate control of him whilst he was in trance.

it for granted that his word was sufficient to command acceptance of what he reported. But it is wrong to judge the past by the present. We should look at those far-off days through Crookes's eyes, not through our own with our further hundred years of research developments to profit by.

Crookes was also a very ambitious man. After the adverse reception his psychical adventures received from many of his scientific confreres, he gradually (though protestingly) abandoned any activities outside his pressing scientific work. When he was appointed President of the Society for Psychical Research for the years 1896-99, none of his polite Victorian colleagues would seem to have pressed him very closely regarding his sittings with Florence Cook. We have no revealing documents or memoirs to help us. But Lord Rayleigh, in commenting on Crookes's work, wrote :

> "I fancy that he was disappointed with the reception that his views met with, having been sanguine enough to expect that he would obtain the same credence when he wrote on psychical matters as when he was dealing with Physics or Chemistry. In later years I understand he did not often introduce the subject, but when questioned was firm that he had nothing to retract."

But our puzzlement goes further than the strange story of Crookes and extends, as I have suggested above, to the situation today in this country where, instead of psychic phenomena being available for study, as they were to earlier investigators, we have had for the last thirty years a state of almost complete stagnation. There has been little if any material available worth the time and money necessary for its investigation. At times Spiritualists and their much-advertised mediums declare they are "not interested" in demonstrating the truth of their claims in order to convince "scientists". Those who argue thus are traitors to the truths they profess to defend! I would remind them of what was said by Myers and Barrett in their stern rebuke to those who held back in the days of D. D. Home : "Such phenomena as those under discussion belonged properly neither to Home himself nor to his sitters, but to science as trustee for mankind."10

Yet reading the reports in those many earlier volumes of

Proceedings, it is surely impossible to postulate that all those keen, intellectual investigators were in reality gullible, feckless, deluded. Indeed, so critical were they that a legend has grown up that "SPR investigators" will believe nothing. This sort of comment is both stupid and uninformed. A truly critical attitude is the finest possible recommendation for the positive claims that have been made for the validity of the phenomena examined. It is in the SPR *Proceedings* that by far the best evidence—the *only* really worthwhile evidence—in favour of Spiritualist claims is to be found (Hodgson on the mental mediumship of Mrs. Piper;11 the Report of the so-called Naples Committee on the physical mediumship of Eusapia Palladino.)12 Critical those early investigators certainly were, as was pointed ow by that great American psychologist and philosopher William James when he wrote :

> "Were I asked to point to a scientific journal where hard-headedness and never-sleeping suspicion of sources of error might be seen in their full bloom, I think I should have to fall back on the *Proceedings* of the Society for Psychical Research. The common run of papers, say on physiological subjects, which one finds in other professional organs, are apt to show a far lower level of critical consciousness.".13

Where have the phenomena our forbears investigated disappeared to, and why? Those who enjoy puzzles, those who ponder upon this puzzling story of Crookes and of the history of psychical research in this country, should get a great deal if enjoyment from this book.

K. M. GOLDNEY, Vice-President of the Society for Psychical Research.

REFERENCES

1 Sir William Barrett, F.R.S., *Obituary of Crookes.* SPR *Proceedings,* 31, 1920.

2 Sir William Crookes, O.M., F.R.S., *Researches in the Phenomena of Spiritualism,* J. Burns, London, 1874.

3 Sir Oliver Lodge, F.R.S., *Presidential Address,* SPR *Proceedings,* 17, 1902

4 R G. Medhurst, D.Sc., and K. M. Goldner, M.B.E., *William Crookes and the Physical Phenomena of Mediumship,* SPR *Proceedings,* 54, 1964.

5 Trevor H. Hall, *The Spiritualists: The Story of Florence Cook and William Crookes,* Gerald Duckworth, London, 1902.

6 R. H. Thouless, D.Sc., *Crookes and Cook,* SPR *Journal,* 42, 1963.

7 R. H. Thouless, D.Sc., and Trevor H. Hall, *Journal of Parapsychology,* 27, Durham, N.C., U.S.A.

8 Professor Charles Richer, *Thirty Years of Psychical Research,* tr. Stanley de Brath, W. Collins & Co., London, 1923.

9 Lord Rayleigh, O.M., F.R.S., *Presidential Address,* SPR *Proceedings,* 30, 1919.

10 F. W. H. Myers, *The Gift of D. D. Home (review),* SPR *journal,* 4, 1890.

11 Richard Hodgson, LL.D., *Reports on Mrs. Piper,* SPR *Proceedings,* 6, 8, 13, 1890, 1892, 1898.

12 The Hon. Everard Feilding, W. W. Baggally, Hereward Carrington, *Report on a Series of Sittings with Eusapia Palladino,* SPR *Proceedings,* 23, 1909.

13 William James, *Essay on Psychical Research* in *The Will to Believe and Other Essays in Popular Philosophy,* Longmans Green, London, 1921.

14 E. E. Fournier d'Albe, *The Life of Sir William Crookes, O.M., F.R.S.,* London, 1923.

15 Nandor Fodor, LL.D., *Encyclopaedia of Psychic Science,* Arthurs Press, London, 1934.

16 Sir Oliver Lodge, *The Life of Crookes,* SPR *Proceedings,* 34, 1924.

RESEARCHES IN THE PHENOMENA OF SPIRITUALISM

THE *Researches* are made up of articles written between July 1871 and June 1874. The greater part relates to the investigation of D. D. Home's telekinetic powers,1 and consists of reprints from the *Quarterly Journal of Science,* a publication then under Crookes's own direction; the collection ends with some letters relating to Florence Cook's materialisations, which are reprinted from Spiritualist journals. The working of these reports **to** one volume might be considered by some as a mesalliance, and by others as a fruitful bond between different modes of approach.

Writing for a scientific journal Crookes was at great pains to display an open-minded detachment unbiassed by any predisposition to attribute physical phenomena to purposive behaviour by spirits. He was, however, quite unequivocal in stating his conviction that he was as certain about the occurrence of paranormal manifestations as he was about "the most elementary fact in chemistry".

These were bold words, and Crookes was courageous in reporting events he believed himself to have witnessed, however ludicrous they might seem. In the *Researches,* however, he did tend (quite reasonably) to suppress to some extent the spiritualistic background against which the more measurable phenomena took place. Thus the sitting described in the second article has had most of the "messages" excised;2 Crookes no doubt felt that a careful reporting of some banal communication might give the impression that he

1 Telekinesis is the movement of objects without the application of any known force.

2 The omitted passages will be found in the sittings *reproduced in* the second part of this volume.

was a credulous person, and detract from the true purpose of the articles, which was to describe the abnormal physical effects produced by Home.

It could not in fact have been an easy task for Crookes to write a report about an accordion playing itself that would strike the scientist in the street as a serious contribution to contemporary physics, and the experiment described by him as the "alteration in weight" of a board when influenced by Home (at first touching it, but later merely placing his hands over it) was a rather plainer statement of the proposition common to both procedures, namely that Home could reverse the effects of gravitation. Home could, by all accounts, do a great deal more —put his head in the fire, float in and out of windows, materialise phantoms, make furniture move around and indeed make the whole room shake—but the board movement was supremely simple, and Crookes did all he could to persuade the secretaries of the Royal Society to bestir themselves to witness the experiment. They showed a lack of curiosity that seems not only unscientific but almost inhuman, and despite his own eminence as a chemist he never succeeded in winning a hearing from the scientific establishment.

Inevitably Crookes was attacked as a woolly-minded adherent to cranky spiritist beliefs, though he maintained a very guarded attitude when considering the relationship between physical phenomena and spirit activity. A considerable part of the *Researches is* given over to self-defence and counter-attack, his chief opponent being Dr. W. B. Carpenter, who went to great lengths to discredit Crookes. Though polemics of this kind tend to date, the arguments adduced by Crookes are all worthy of attention, for in answering charges of incompetence he elucidates points that might otherwise have been left in doubt; moreover, be emerges from the various disputes far more vividly than if he had merely stated his case instead of being compelled to argue it.

The open-minded reader—which in this context means one prepared to be convinced of "the impossible" if the evidence for it is sufficiently cogent—will probably find himself obliged to accept Crookes's testimony to Home's powers, unless he prefers a fanciful explanation in terms of fraud, hallucination, multiple hysteria, and so on; for a reasonable belief in "the impossible”

(which is not assessible in terms of likelihood) may **p**aradoxically be more logical and less fanciful than belief in the grossly improbable. Nevertheless, most people draw a line at the materialisation of Katie King, and Mrs. Goldney has mentioned the rather far-fetched explanation that has been put forward to account for Crookes having been allegedly deceived at such close quarters. In the third section of this volume a letter from Crookes to his laboratory assistant, C. H. Gimingham, is quoted from which it would appear that Crookes actually believed Florence Cook to be the victim of persecution by a fiend from a "bottomless pit". Whatever the explanation of Crooke's championship of Florence Cook, collusion with her fiend seems the most unlikely.

In principle, a materialised camel is no more difficult to swallow than a materialised gnat, and by 1874 Crookes must have felt so convinced by the experiences outlined in the article reprinted from the *Quarterly Journal of Science* for January of that year that he felt prepared to testify to the most outrageous phenomenon if he personally felt sure he had observed it happening.

RESEARCHES

IN

THE PHENOMENA

OF

SPIRITUALISM.

BY

WILLIAM CROOKES, F.R.S.

[*Reprinted from* THE QUARTERLY JOURNAL OF SCIENCE.]

LONDON:
J. BURNS, 15 SOUTHAMPTON ROW, HOLBORN, W.C.
1874.

BOSTON MEDICAL LIBRARY

SPIRITUALISM

LIGHT OF MODERN SCIENCE.

SOME weeks ago the fact that I was engaged in investigating Spiritualism, so called, was announced in a contemporary:* and in consequence of the many communications I have since received, I think it desirable to say a little concerning the investigation which I have commenced. Views or opinions I cannot be said to possess on a subject which I do not pretend to understand. I consider it the duty of scientific men who have learnt exact modes of working, to examine phenomena which attract the attention of the public, in order to confirm their genuineness, or to explain, if possible, the delusions of the honest and to expose the tricks of deceivers. But I think it a pity that any public announcement of a man's investigation should be made until he has shown himself willing to speak out.

A man may be a true scientific man, and yet agree with Professor De Morgan, when he says—"I have both seen and heard, in a manner which would make unbelief impossible, things called spiritual, which cannot be taken by a rational being to be capable of explanation by imposture, coincidence, or mistake. So far I feel the ground firm under me; but when it comes to what is the cause of these phenomena, I find I cannot adopt any explanation which has yet been suggested. . . . The physical explanations which I have seen are easy, but miserably insufficient. The spiritual hypothesis is sufficient, but ponderously difficult."

Regarding the sufficiency of the explanation, I am not able to speak. That certain physical phenomena, such as the movement of material substances, and the production of sounds resembling electric discharges, occur under cir-

* *The Athenæum.*

cumstances in which they cannot be explained by any physical law at present known, is a fact of which I am as certain as I am of the most elementary fact in chemistry. My whole scientific education has been one long lesson in exactness of observation, and I wish it to be distinctly understood that this firm conviction is the result of most careful investigation. But I cannot, at present, hazard even the most vague hypothesis as to the cause of the phenomena. Hitherto I have seen nothing to convince me of the truth of the "spiritual" theory. In such an inquiry the intellect demands that the spiritual proof must be absolutely incapable of being explained away; it must be so strikingly and convincingly true that we cannot, dare not deny it.

Faraday says, "Before we proceed to consider any question involving physical principles, we should set out with clear ideas of the naturally possible and impossible." But this appears like reasoning in a circle: we are to investigate nothing till we know it to be *possible,* whilst we cannot say what is *impossible,* outside pure mathematics, till we know everything.

In the present case I prefer to enter upon the enquiry with no preconceived notions whatever as to what can or cannot be, but with all my senses alert and ready to convey information to the brain; believing, as I do, that we have by no means exhausted all human knowledge or fathomed the depths of all the physical forces, and remembering that the great philosopher already quoted said, in reference to some speculations on the gravitating force, "Nothing is too wonderful to be true, if it be consistent with the laws of nature; and in such things as these, experiment is the best test of such consistency."

The modes of reasoning of scientific men appear to be generally misunderstood by spiritualists with whom I have conversed, and the reluctance of the trained scientific mind to investigate this subject is frequently ascribed to unworthy motives. I think, therefore, it will be of service if I here illustrate the modes of thought current amongst those who investigate science, and say what kind of experimental proof science has a right to demand before admitting a new department of knowledge into her ranks. We must not mix up the exact and the inexact. The supremacy of accuracy must be absolute.

The first requisite is to be sure of facts; then to ascertain conditions; next, laws. Accuracy and knowledge of detail stand foremost amongst the great aims of modern scientific

men. No observations are of much use to the student of science unless they are truthful and made under test conditions; and here I find the great mass of spiritualistic evidence to fail. In a subject which, perhaps, more than any other lends itself to trickery and deception, the precautions against fraud appear to have been, in most cases, totally insufficient, owing, it would seem, to an erroneous idea that to ask for such safeguards was to imply a suspicion of the honesty of some one present. We may use our own unaided senses, but when we ask for instrumental means to increase their sharpness, certainty, and trustworthiness under circumstances of excitement and difficulty, and when one's natural senses are liable to be thrown off their balance, offence is taken.

In the countless number of recorded observations I have read, there appear to be few instances of meetings held for the express purpose of getting the phenomena under test conditions, in the presence of persons properly qualified by scientific training to weigh and adjust the value of the evidence which might present itself. The only good series of test experiments I have met with were tried by the Count de Gasparin, and he, whilst admitting the genuineness of the phenomena, came to the conclusion that they were not due to supernatural agency.

The pseudo-scientific spiritualist professes to know everything: no calculations trouble his serenity, no hard experiments, no long laborious readings; no weary attempts to make clear in words that which has rejoiced the heart and elevated the mind. He talks glibly of all sciences and arts, overwhelming the enquirer with terms like "electro-biologize," "psychologize," "animal magnetism," &c.—a mere play upon words, showing ignorance rather than understanding. Popular science such as this is little able to guide discovery rushing onwards to an unknown future; and the real workers of science must be extremely careful not to allow the reins to get into unfit and incompetent hands.

In investigations which so completely baffle the ordinary observer, the thorough scientific man has a great advantage. He has followed science from the beginning through a long line of learning, and he knows, therefore, in what direction it is leading; he knows that there are dangers on one side, uncertainties on another, and almost absolute certainty on a third: he sees to a certain extent in advance. But, where every step is towards the marvellous and unexpected, precautions and tests should be multiplied rather than diminished. Investigators must work; although their work may

something to replace it, asks for some such exhibitions of power to be manifested in his laboratory, where he can weigh, measure, and submit it to proper tests.*

For these reasons and with these feelings I began an inquiry suggested to me by eminent men exercising great influence on the thought of the country. At first, like other men who thought little of the matter and saw little, I believed that the whole affair was a superstition, or at least an unexplained trick. Even at this moment I meet with cases which I cannot *prove* to be anything else; and in some cases I am sure that it is a delusion of the senses.

I by no means promise to enter fully into this subject; it seems very difficult to obtain opportunities, and numerous failures certainly may dishearten anyone. The persons in whose presence these phenomena take place are few in number, and opportunities for experimenting with previously arranged apparatus are rarer still. I should feel it to be a great satisfaction if I could bring out light in any direction, and I may safely say that I care not in what direction. With this end in view, I appeal to any of my readers who may possess a key to these strange phenomena, to further the progress of the truth by assisting me in my investigations. That the subject has to do with strange physiological conditions is clear, and these in a sense may be called "spiritual" when they produce certain results in our minds. At present the phenomena I have observed baffle explanation; so do the phenomena of thought, which are also spiritual, and which no philosopher has yet understood. No man, however, denies them.

The explanations given to me, both orally and in most of the books I have read, are shrouded in such an affected ponderosity of style, such an attempt at disguising poverty of ideas in grandiloquent language, that I feel it impossible, after driving off the frothy diluent, to discern a crystalline residue of meaning. I confess that the reasoning of some spiritualists would almost seem to justify Faraday's severe statement—that many dogs have the power of coming to much more logical conclusions. Their speculations utterly ignore all theories of force being only a form of molecular motion, and they speak of Force, Matter, and Spirit, as

* In justice to my subject, I must state that, on repeating these views to some of the leading "spiritualists" and most trustworthy "mediums" in England, they express perfect confidence in the success of the enquiry, if honestly carried out in the spirit here exemplified; and they have offered to assist me to the utmost of their ability, by placing their peculiar powers at my disposal. As far as I have proceeded, I may as well add that the preliminary tests have been satisfactory.

three distinct entities, each capable of existing without the others; although they sometimes admit that they are mutually convertible.

These spiritualists are certainly not much in advance of an alchemical writer, who says—

> "I asked Philosophy how I should
> Have of her the thing I would.
> She answered me when I was able
> To make the water malliable,
> Or else the way if I could finde,
> To measure out a yard of winde;
> Then shalt thou have thine own desire,
> When thou canst weigh an ounce of Fire;
> Unless that thou canst do these three,
> Content thyselfe, thou get'st not me."

It has been my wish to show that science is gradually making its followers the representatives of care and accuracy. It is a fine quality that of uttering undeniable truth. Let, then, that position not be lowered, but let words suit facts with an accuracy equal to that with which the facts themselves can be ascertained; and in a subject encrusted with credulity and superstition, let it be shown that there *is* a class of facts to be found upon which reliance can be placed, so far, that we may be certain they will never change. In common affairs a mistake may have but a short life, but in the study of nature an imperfect observation may cause infinite trouble to thousands. The increased employment of scientific methods will promote exact observation and greater love of truth among enquirers, and will produce a race of observers who will drive the worthless residuum of spiritualism hence into the unknown limbo of magic and necromancy.

If spiritualists would but attend to the teachings of their own prophets, they would no longer have to complain of the hostile attitude of Science; for hear what Thomas L. Harris urges, in his "Lyric of a Golden Age!"

> "The nearer to the practical men keep—
> The less they deal in vague and abstract things
> The less they deal in huge mysterious words—
> The mightier is their power.
>
> . . . .
>
> The simplest peasant who observes a truth,
> And from a fact deduces principle,
> Adds solid treasure to the public wealth.
> The theorist, who dreams a rainbow dream,
> And calls hypothesis philosophy,
> At best is but a paper financier,
> Who palms his specious promises for gold.
> Facts are the basis of philosophy;
> Philosophy the harmony of facts
> Seen in their right relation.

[From the "Quarterly Journal of Science," July 1, 1871.]

EXPERIMENTAL INVESTIGATION OF A NEW FORCE.

TWELVE months ago in this journal* I wrote an article, in which, after expressing in the most emphatic manner my belief in the occurrence, under certain circumstances, of phenomena inexplicable by any known natural laws, I indicated several tests which men of science had a right to demand before giving credence to the genuineness of these phenomena. Among the tests pointed out were, that a "delicately poised balance should be moved under test conditions;" and that some exhibition of power equivalent to so many "foot-pounds" should be "manifested in his laboratory, where the experimentalist could weigh, measure, and submit it to proper tests." I said, too, that I could not promise to enter fully into this subject, owing to the difficulties of obtaining opportunities, and the numerous failures attending the enquiry; moreover, that "the persons in whose presence these phenomena take place are few in number, and opportunities for experimenting with previously arranged apparatus are rarer still."

Opportunities having since offered for pursuing the investigation, I have gladly availed myself of them for applying to these phenomena careful scientific testing experiments, and I have thus arrived at certain definite results which I think it right should be published. These experiments appear conclusively to establish the existence of a new force, in some unknown manner connected with the human organisation, which for convenience may be called the Psychic Force.

Of all the persons endowed with a powerful development of this Psychic Force, and who have been termed "mediums" upon quite another theory of its origin, Mr. Daniel Dunglas Home is the most remarkable, and it is mainly owing to

* See Quarterly Journal of Science, vol. vii., p. 316, July, 1870.

the many opportunities I have had of carrying on my investigation in his presence that I am enabled to affirm so conclusively the existence of this Force. The experiments I have tried have been very numerous, but owing to our imperfect knowledge of the conditions which favour or oppose the manifestations of this force, to the apparently capricious manner in which it is exerted, and to the fact that Mr. Home himself is subject to unaccountable ebbs and flows of the force, it has but seldom happened that a result obtained on one occasion could be subsequently confirmed and tested with apparatus specially contrived for the purpose.

Among the remarkable phenomena which occur under Mr. Home's influence, the most striking, as well as the most easily tested with scientific accuracy, are—(1) the alteration in the weight of bodies, and (2) the playing of tunes upon musical instruments (generally an accordion, for convenience of portability) without direct human intervention, under conditions rendering contact or connection with the keys impossible. Not until I had witnessed these facts some half-dozen times, and scrutinised them with all the critical acumen I possess, did I become convinced of their objective reality. Still, desiring to place the matter beyond the shadow of doubt, I invited Mr. Home on several occasions to come to my own house, where, in the presence of a few scientific enquirers, these phenomena could be submitted to crucial experiments.

The meetings took place in the evening, in a large room lighted by gas. The apparatus prepared for the purpose of testing the movements of the accordion, consisted of a cage, formed of two wooden hoops, respectively 1 foot 10 inches and 2 feet diameter, connected together by 12 narrow laths, each 1 foot 10 inches long, so as to form a drum-shaped frame, open at the top and bottom; round this 50 yards of insulated copper wire were wound in 24 rounds, each being rather less than an inch from its neighbour. These horizontal strands of wire were then netted together firmly with string, so as to form meshes rather less than 2 inches long by 1 inch high. The height of this cage was such that it would just slip under my dining table, but be too close to the top to allow of the hand being introduced into the interior, or to admit of a foot being pushed underneath it. In another room were two Grove's cells, wires being led from them into the dining-room for connection, if desirable, with the wire surrounding the cage.

The accordion was a new one, having been purchased by

myself for the purpose of these experiments at Wheatstone's, in Conduit Street. Mr. Home had neither handled nor seen the instrument before the commencement of the test experiments.

In another part of the room an apparatus was fitted up for experimenting on the alteration in the weight of a body. It consisted of a mahogany board, 36 inches long by 9½ inches wide and 1 inch thick. At each end a strip of mahogany 1½ inches wide was screwed on, forming feet. One end of the board rested on a firm table, whilst the other end was supported by a spring balance hanging from a substantial tripod stand. The balance was fitted with a self-registering index, in such a manner that it would record the maximum weight indicated by the pointer. The apparatus was adjusted so that the mahogany board was horizontal, its foot resting flat on the support. In this position its weight was 3 lbs., as marked by the pointer of the balance.

Before Mr. Home entered the room, the apparatus had been arranged in position, and he had not even the object of some parts of it explained before sitting down. It may, perhaps, be worth while to add, for the purpose of anticipating some critical remarks which are likely to be made, that in the afternoon I called for Mr. Home at his apartments, and when there he suggested that, as he had to change his dress, perhaps I should not object to continue our conversation in his bedroom. I am, therefore, enabled to state positively, that no machinery, apparatus, or contrivance of any sort was secreted about his person.

The investigators present on the test occasion were an eminent physicist, high in the ranks of the Royal Society, whom I will call Dr. A. B.; a well-known Serjeant-at-Law, whom I will call Serjeant C. D.; my brother; and my chemical assistant.*

Mr. Home sat in a low easy chair at the side of the table. In front of him under the table was the aforesaid cage, one of his legs being on each side of it. I sat close to him on his left, and another observer sat close to him on his right, the rest of the party being seated at convenient distances round the table.

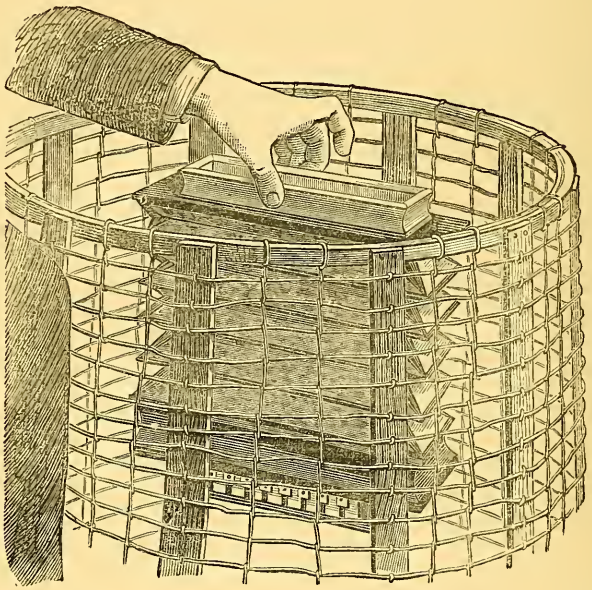
* It argues ill for the boasted freedom of opinion among scientific men, that they have so long refused to institute a scientific investigation into the existence and nature of facts asserted by so many competent and credible witnesses, and which they are freely invited to examine when and where they please. For my own part, I too much value the pursuit of truth, and the discovery of any new fact in nature, to avoid enquiry because it appears to clash with prevailing opinions. But as I have no right to assume that others are equally willing to do this, I refrain from mentioning the names of my friends without their permission.

For the greater part of the evening, particularly when anything of importance was proceeding, the observers on each side of Mr. Home kept their feet respectively on his feet, so as to be able to detect his slightest movement.

The temperature of the room varied from 68° to 70° F.

Mr. Home took the accordion between the thumb and middle finger of one hand at the opposite end to the keys (see woodcut, Fig. 1), (to save repetition this will be subsequently called "in the usual manner.") Having

Fig. 1.

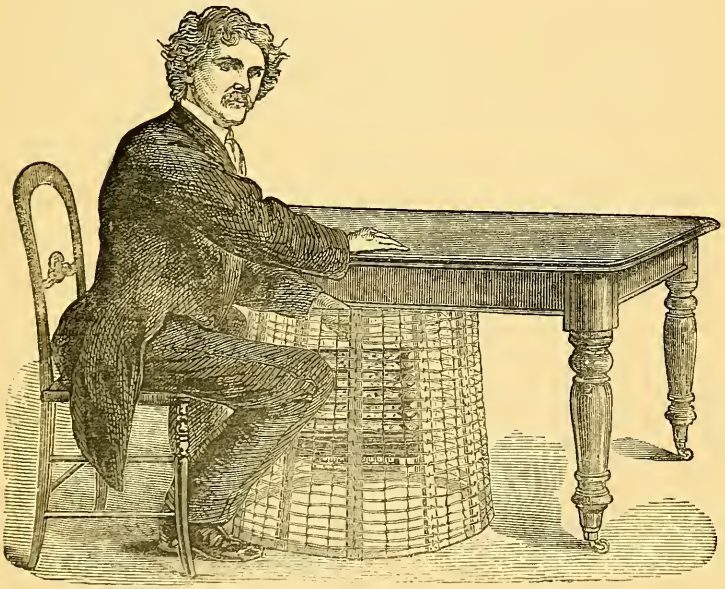


previously opened the bass key myself, and the cage being drawn from under the table so as just to allow the accordion to be passed in with its keys downwards, it was pushed back as close as Mr. Home's arm would permit, but without hiding his hand from those next to him (see Fig. 2). Very soon the accordion was seen by those on each side to be waving about in a somewhat curious manner; then sounds came from it, and finally several notes were played in succession. Whilst this was going on, my assistant went under the table, and reported that the accordion was expanding and contracting; at the same time it was seen that the hand of Mr. Home by which it was held was quite still, his other hand resting on the table.

Presently the accordion was seen by those on either side of Mr. Home to move about, oscillating and going round and round the cage, and playing at the same time. Dr. A. B. now looked under the table, and said that Mr. Home's hand appeared quite still whilst the accordion was moving about emitting distinct sounds.

Mr. Home still holding the accordion in the usual manner in the cage, his feet being held by those next him, and his other hand resting on the table, we heard distinct and separate notes sounded in succession, and then a simple air

FIG. 2.



was played. As such a result could only have been produced by the various keys of the instrument being acted upon in harmonious succession, this was considered by those present to be a crucial experiment. But the sequel was still more striking, for Mr. Home then removed his hand altogether from the accordion, taking it quite out of the cage, and placed it in the hand of the person next to him. The instrument then continued to play, no person touching it and no hand being near it.

I was now desirous of trying what would be the effect of passing the battery current round the insulated wire of the

cage, and my assistant accordingly made the connection with the wires from the two Grove's cells. Mr. Home again held the instrument inside the cage in the same manner as before, when it immediately sounded and moved about vigorously. But whether the electric current passing round the cage assisted the manifestation of force inside, it is impossible to say.

The accordion was now again taken without any visible touch from Mr. Home's hand, which he removed from it entirely and placed upon the table, where it was taken by the person next to him, and seen, as now were both his hands, by all present. I and two of the others present saw the accordion distinctly floating about inside the cage with no visible support. This was repeated a second time, after a short interval. Mr. Home presently re-inserted his hand in the cage and again took hold of the accordion. It then commenced to play, at first chords and runs, and afterwards a well-known sweet and plaintive melody, which it executed perfectly in a very beautiful manner. Whilst this tune was being played, I grasped Mr. Home's arm, below the elbow, and gently slid my hand down it until I touched the top of the accordion. He was not moving a muscle. His other hand was on the table, visible to all, and his feet were under the feet of those next to him.

Having met with such striking results in the experiments with the accordion in the cage, we turned to the balance apparatus already described. Mr. Home placed the tips of his fingers lightly on the extreme end of the mahogany board which was resting on the support, whilst Dr. A. B. and myself sat, one on each side of it, watching for any effect which might be produced. Almost immediately the pointer of the balance was seen to descend. After a few seconds it rose again. This movement was repeated several times, as if by successive waves of the Psychic Force. The end of the board was observed to oscillate slowly up and down during the experiment.

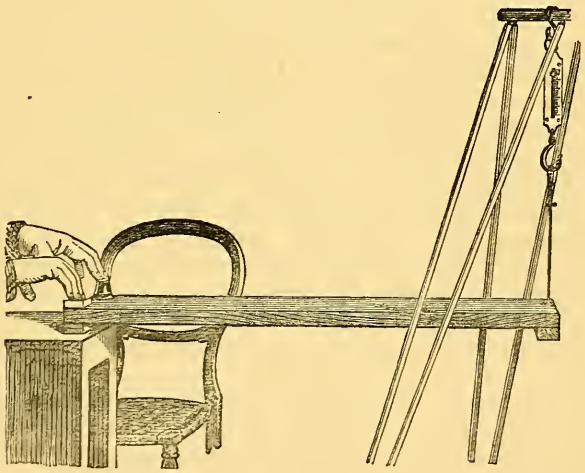
Mr. Home now of his own accord took a small hand-bell and a little card match-box, which happened to be near, and placed one under each hand, to satisfy us, as he said, that he was not producing the downward pressure (see Fig. 3). The very slow oscillation of the spring balance became more marked, and Dr. A. B., watching the index, said that he saw it descend to 6½ lbs. The normal weight of the board as so suspended being 3 lbs., the additional downward pull was therefore 3½ lbs. On looking immediately afterwards at the automatic register, we saw that the index had at

one time descended as low as 9 lbs., showing a maximum pull of 6 lbs. upon a board whose normal weight was 3 lbs.

In order to see whether it was possible to produce much effect on the spring balance by pressure at the place where Mr. Home's fingers had been, I stepped upon the table and stood on one foot at the end of the board. Dr. A. B., who was observing the index of the balance, said that the whole weight of my body (140 lbs.) so applied only sunk the index 1½ lbs., or 2 lbs. when I jerked up and down. Mr. Home had been sitting in a low easy-chair, and could not, therefore, had he tried his utmost, have exerted any material influence on these results. I need scarcely add that his feet as well as his hands were closely guarded by all in the room.

This experiment appears to me more striking, if possible, than the one with the accordion. As will be seen on referring to the cut (Fig. 3), the board was arranged perfectly horizontally, and it was particularly noticed that Mr.

Fig. 3.



Home's fingers were not at any time advanced more than 1½ inches from the extreme end, as shown by a pencil-mark, which, with Dr. A. B.'s acquiescence, I made at the time. Now, the wooden foot being also 1½ inches wide, and resting flat on the table, it is evident that no amount of pressure exerted within this space of 1½ inches could produce any action on the balance. Again, it is also evident that when the end furthest from Mr. Home sank, the board would turn on the further edge of this foot as on a fulcrum. The arrange-

ment was consequently that of a see-saw, 36 inches in length, the fulcrum being 1½ inches from one end; were he therefore to have exerted a downward pressure, it would have been in opposition to the force which was causing the other end of the board to move down.

The slight downward pressure shown by the balance when I stood on the board was owing probably to my foot extending beyond this fulcrum.

I have now given a plain unvarnished statement of the facts from copious notes written at the time the occurrences were taking place, and copied out in full immediately after. Indeed, it would be fatal to the object I have in view—that of urging the scientific investigation of these phenomena—were I to exaggerate ever so little; for although to my readers Dr. A. B. is at present represented by incorporeal initials, to me the letters represent a power in the scientific world that would certainly convict me if I were to prove an untrustworthy narrator.

I confess I am surprised and pained at the timidity or apathy shown by scientific men in reference to this subject. Some little time ago, when an opportunity for examination was first presented to me, I invited the co-operation of some scientific friends in a systematic investigation; but I soon found that to obtain a scientific committee for the investigation of this class of facts was out of the question, and that I must be content to rely on my own endeavours, aided by the co-operation from time to time of a few scientific and learned friends who were willing to join in the inquiry. I still feel that it would be better were such a committee of known men to be formed, who would meet Mr. Home in a fair and unbiased manner, and I would gladly assist in its formation; but the difficulties in the way are great.

A committee of scientific men met Mr. Home some months ago at St. Petersburg. They had one meeting only, which was attended with negative results; and on the strength of this they published a report highly unfavourable to Mr. Home. The explanation of this failure, *which is all they have accused him of*, appears to me quite simple. Whatever the nature of Mr. Home's power, it is very variable, and at times entirely absent. It is obvious that the Russian experiment was tried when the force was at a minimum. The same thing has frequently happened within my own experience. A party of scientific men met Mr. Home at my house, and the results were as negative as those at St. Petersburg. Instead, however, of throwing up the

inquiry we patiently repeated the trial a second and a third time, when we met with results which were positive.

These conclusions have not been arrived at hastily or on insufficient evidence. Although space will allow only the publication of the details of one trial, it must be clearly understood that for some time past I have been making similar experiments and with like results. The meeting on the occasion here described was for the purpose of confirming previous observations by the application of crucial tests, with carefully arranged apparatus, and in the presence of irreproachable witnesses.

Respecting the cause of these phenomena, the nature of the force to which, to avoid periphrasis, I have ventured to give the name of *Psychic*, and the correlation existing between that and the other forces of nature, it would be wrong to hazard the most vague hypothesis. Indeed, in enquiries connected so intimately with rare physiological and psychological conditions, it is the duty of the enquirer to abstain altogether from framing theories until he has accumulated a sufficient number of facts to form a substantial basis upon which to reason. In the presence of strange phenomena as yet unexplored and unexplained following each other in such rapid succession, I confess it is difficult to avoid clothing their record in language of a sensational character. But, to be successful, an inquiry of this kind must be undertaken by the philosopher without prejudice and without sentiment. Romantic and superstitious ideas should be entirely banished, and the steps of his investigation should be guided by intellect as cold and passionless as the instruments he uses. Having once satisfied himself that he is on the track of a new truth, that single object should animate him to pursue it, without regarding whether the facts wich occur before his eyes are "naturally possible or impossible."

Since this article was in type, the Author has been favoured with the following letters from Dr. Huggins and Mr. Sergeant Cox—the Dr. A. B. and Sergeant C. D. therein referred to:—

Upper Tulse Hill, S.W.,
June 9, 1871.

DEAR MR. CROOKES,—Your proof appears to me to contain a correct statement of what took place in my presence at your house. My position at the table did not permit me to

be a witness to the withdrawal of Mr. Home's hand from the accordion, but such was stated to be the case at the time by yourself and by the person sitting on the other side of Mr. Home.

The experiments appear to me to show the importance of further investigation, but I wish it to be understood that I express no opinion as to the cause of the phenomena which took place. Yours very truly,

WILLIAM HUGGINS.

WM. CROOKES, Esq, F.R.S.

36, Russell Square,
June 8, 1871.

MY DEAR SIR,—Having been present, for the purpose of scrutiny, at the trial of the experiments reported in this paper, I readily bear my testimony to the perfect accuracy of your description of them, and to the care and caution with which the various crucial tests were applied.

The results appear to me conclusively to establish the important fact, that there is a force proceeding from the nerve-system capable of imparting motion and weight to solid bodies within the sphere of its influence.

I noticed that the force was exhibited in tremulous pulsations, and not in the form of steady continuous pressure, the indicator rising and falling incessantly throughout the experiment. This fact seems to me of great significance, as tending to confirm the opinion that assigns its source to the nerve organisation, and it goes far to establish Dr. Richardson's important discovery of a nerve atmosphere of various intensity enveloping the human structure.

Your experiments completely confirm the conclusion at which the Investigation Committee of the Dialectical Society arrived, after more than forty meetings for trial and test.

Allow me to add that I can find no evidence even tending to prove that this force is other than a force proceeding from, or directly dependent upon, the human organisation, and therefore, like all other forces of nature, wholly within the province of that strictly scientific investigation to which you have been the first to subject it.

Psychology is a branch of science as yet almost entirely unexplored, and to the neglect of it is probably to be attributed the seemingly strange fact that the existence of this nerve-force should have remained so long untested, unexamined, and almost unrecognised.

Now that it is proved by mechanical tests to be a fact in nature (and if a fact, it is impossible to exaggerate its importance to physiology and the light it must throw upon the obscure laws of life, of mind and the science of medicine) it cannot fail to command the immediate and most earnest examination and discussion by physiologists and by all who take an interest in that knowledge of "man," which has been truly termed "the noblest study of mankind." To avoid the appearance of any foregone conclusion, I would recommend the adoption for it of some appropriate name, and I venture to suggest that the force be termed the *Psychic Force;* the persons in whom it is manifested in extraordinary power *Psychics;* and the science relating to it *Psychism* as, being a branch of *Psychology.*

Permit me, also, to propose the early formation of a *Psychological Society*, purposely for the promotion, by means of experiment, papers, and discussion, of the study of that hitherto neglected Science.—I am, &c.,

EDWD. WM. COX.

To W. CROOKES, Esq., F.R.S.

[From the "Quarterly Journal of Science," October 1, 1871.]

SOME FURTHER EXPERIMENTS ON PSYCHIC FORCE.

"I am attacked by two very opposite sects—the scientists and the know-nothings. Both laugh at me—calling me 'the frogs' dancing master.' Yet I know that I have discovered one of the greatest forces in nature."—GALVANI.

IT was my intention to have allowed a longer time to elapse before again writing on the subject of "Psychic Force" in this journal. My reason for this resolve was not so much owing to want of new matter and fresh results,—on the contrary, I have much that is new in the way of experimental evidence in support of my previous conclusions,—but I felt some reluctance to impose on the readers of the "Quarterly Journal of Science" a subject which they might view with little favour. When the editor of a scientific journal is also an experimental investigator, or a student of any special branch of knowledge, there is a natural tendency on his part to unduly exalt the importance of that which is occupying his thoughts at the time; and thus the journal which he conducts is in danger of losing breadth of basis, of becoming the advocate of certain opinions, or of being coloured by special modes of thought.

The manner in which the experimental investigation described in the last "Quarterly Journal" has been received, removes any doubt I might entertain on this score. The very numerous communications which have been addressed to the office of this journal show that another paper on the same subject will not be distasteful to a large number of those who did me the honour to read my former article; whilst it appears to be generally assumed that I should take an early opportunity to reply to some of the criticisms provoked by the remarkable character of the experimental results which I described.

Many of the objections made to my former experiments are answered by the series about to be related. Most of the criticisms to which I have been subjected have been perfectly fair and courteous, and these I shall endeavour to meet in the fullest possible manner. Some critics, however, have fallen into the error of regarding me as an advocate for certain *opinions*, which they choose to ascribe to me, though in truth my single purpose has been to state fairly and to offer no opinion. Having evolved men of straw from their own imagination, they proceed vigorously to slay them,

under the impression that they are annihilating me. Others,—and I am glad to say they are very few,—have gone so far as to question my veracity:—"Mr. Crookes must get better witnesses before he can be believed!" Accustomed as I am to have my word believed without witnesses, this is an argument which I cannot condescend to answer. All who know me and read my articles will, I hope, take it for granted that the *facts* I lay before them are correct, and that the experiments were honestly performed, with the single object of eliciting *the truth.*

It is edifying to compare some of the present criticisms with those that were written twelve months ago. When I first stated in this journal that I was about to investigate the phenomena of so-called spiritualism, the announcement called forth universal expressions of approval. One said that my "statements deserved respectful consideration;" another, expressed "profound satisfaction that the subject was about to be investigated by a man so thoroughly qualified as," &c.; a third was "gratified to learn that the matter is now receiving the attention of cool and clear-headed men of recognised position in science;" a fourth asserted that no one could doubt Mr. Crookes's ability to conduct the investigation with rigid philosophical impartiality;" and a fifth was good enough to tell its readers that "if men like Mr. Crookes grapple with the subject, taking nothing for granted until it is proved, we shall soon know how much to believe."

These remarks, however, were written too hastily. It was taken for granted by the writers that the results of my experiments would be in accordance with their preconceptions. What they really desired was not *the truth,* but an additional witness in favour of their own foregone conclusion. When they found that the facts which that investigation established could not be made to fit those opinions, why,—"so much the worse for the facts." They try to creep out of their own confident recommendations of the enquiry by declaring that "Mr. Home is a clever conjurer, who has duped us all." "Mr. Crookes might, with equal propriety, examine the performances of an Indian juggler." "Mr. Crookes must get better witnesses before he can be believed." "The thing is too absurd to be treated seriously." "It is impossible, and therefore can't be."* "The observers have all been biologised (!) and fancy they saw things occur which really never took place," &c., &c.

* The quotation occurs to me—"I never said it was possible, I only said it was true."

These remarks imply a curious oblivion of the very functions which the scientific enquirer has to fulfil. I am scarcely surprised when the objectors say that I have been deceived merely because they are unconvinced without personal investigation, since the same unscientific course of *à priori* argument has been opposed to all great discoveries. When I am told that what I describe cannot be explained in accordance with preconceived ideas of the laws of nature, the objector really begs the very question at issue and resorts to a mode of reasoning which brings science to a standstill. The argument runs in a vicious circle: we must not assert a fact till we know that it is in accordance with the laws of nature, while our only knowledge of the laws of nature must be based on an extensive observation of facts. If a new fact seems to oppose what is called a law of nature, it does not prove the asserted fact to be false, but only that we have not yet ascertained all the laws of nature, or not learned them correctly.

In his opening address before the British Association at Edinburgh this year, Sir William Thomson said, "Science is bound by the everlasting law of honour to face fearlessly every problem which can fairly be presented to it." My object in thus placing on record the results of a very remarkable series of experiments is to present such a problem, which, according to Sir William Thomson, "Science is bound by the everlasting law of honour to face fearlessly." It will not do merely to deny its existence, or try to sneer it down. Remember, I hazard no hypothesis or theory whatever; I merely vouch for certain facts, my only object being—the *truth*. Doubt, but do not deny; point out, by the severest criticism, what are considered fallacies in my experimental tests, and suggest more conclusive trials; but do not let us hastily call our senses lying witnesses merely because they testify against preconceptions. I say to my critics, Try the experiments; investigate with care and patience as I have done. If, having examined, you discover imposture or delusion, proclaim it and say how it was done.† But, if you find it be a fact, avow it fearlessly, as "by the everlasting law of honour" you are bound to do.

I may at once answer one objection which has been made in several quarters, viz., that my results would carry more weight had they been tried a greater number of times, and with other persons besides Mr. Home. The fact is, I have been working at the subject for two years, and have found nine or ten different persons who possess psychic power in

† only give us the chance to see the experiment & we will do so. But Home refuses this chance.

more or less degree ; but its development in Mr. D. D. Home is so powerful, that, having satisfied myself by careful experiments that the phenomena observed were genuine, I have, merely as a matter of convenience, carried on my experiments with him, in preference to working with others in whom the power existed in a less striking degree. Most of the experiments I am about to describe, however, have been tried with another person other than Mr. Home, and in his absence.

Before proceeding to relate my new experiments, I desire to say a few words respecting those already described. The objection has been raised that announcements of such magnitude should not be made on the strength of one or two experiments hastily performed. I reply that the conclusions were not arrived at hastily, nor on the results of two or three experiments only. In my former paper ("Quarterly Journal of Science," page 340), I remarked :—"Not until I had witnessed these facts some half-dozen times, and scrutinised them with all the critical acumen I possess, did I become convinced of their objective reality." Before fitting up special apparatus for these experiments, I had seen on five separate occasions, objects varying in weight from 25 to 100 lbs., temporarily influenced in such a manner, that I, and others present could with difficulty lift them from the floor Wishing to ascertain whether this was a physical fact, or merely due to a variation in the power of our own strength under the influence of imagination, I tested with a weighing machine the phenomenon on two subsequent occasions when I had an opportunity of meeting Mr. Home at the house of a friend. On the first occasion, the increase of weight was from 8 lbs. normally, to 36 lbs., 48 lbs., and 46 lbs., in three successive experiments tried under strict scrutiny. On the second occasion, tried about a fortnight after, in the presence of other observers, I found the increase of weight to be from 8 lbs. to 23 lbs., 43 lbs., and 27 lbs., in three successive trials, varying the conditions. As I had the entire management of the above-mentioned experimental trials, employed an instrument of great accuracy, and took every care to exclude the possibility of the results being influenced by trickery, I was not unprepared for a satisfactory result when the fact was properly tested in my own laboratory. The meeting on the occasion formerly described was, therefore, for the purpose of confirming my previous observations by the application of crucial tests, with carefully arranged apparatus of a still more delicate nature.

That this is a legitimate subject for scientific inquiry scarcely needs assertion. Faraday himself did not consider it beneath his dignity to examine similar phenomena; and, in a letter to Sir Emerson Tennent, written in 1861 on the occasion of a proposed experimental inquiry all into the phenomena occurring in Mr. Home's presence, he wrote:—"Is he (Mr. Home) willing to investigate as a philosopher, and, as such, to have no concealments, no darkness, to be open in communication, and to aid inquiry all that he can? . . . Does he consider the effects natural or supernatural? If they be the glimpses of natural action not yet reduced to law, ought it not to be the duty of everyone who has the least influence in such actions personally to develope them, and to aid others in their development, by the utmost openness and assistance, and by the application of every critical method, either mental or experimental, which the mind of man can devise?"

If circumstances had not prevented Faraday from meeting Mr. Home, I have no doubt he would have witnessed phenomena similar to those I am about to describe, and he could not have failed to see that they offered "glimpses of natural action not yet reduced to law."

I have already alluded to the publication of the ill-success encountered by the members of the St. Petersburg Committee. Had the results been satisfactory, it must be fairly assumed that the members would have been equally ready to publish a report of their success.

I am informed by my friend Professor Boutlerow,* that during the last winter, he tried almost the same experiments as those here detailed, and with still more striking results. The normal tension on the dynamometer being 100 lbs., it was increased to about 150 lbs., Mr. Home's hands being placed in contact with the apparatus in such a manner that any exertion of power on his part would diminish, instead of increase, the tension.

In 1854, Count Agenor de Gasparin published a book,† giving full details of a large series of physical experiments which he had tried with some private friends in whom this force was found to be strongly developed. His experiments were very numerous and were carried on under the strictest test conditions. The fact of motion of heavy bodies without mechanical contact was demonstrated over and over

* Professor of Chemistry at the University of St. Petersburg; author of a work on Chemistry, entitled "Lehrbuch der Organischen Chemie;" Leipzig 1868.

† Science *versus* Spiritualism. Paris, 1854. New York, 1857.

again. Careful experiments were made to measure the force both of gravitation and of levitation thus communicated to the substances under trial, and an ingenious plan was adopted by which Count de Gasparin was enabled to obtain a rough numerical estimate of the power of the psychic force in each individual. The author finally arrived at the conclusion that all these phenomena are to be accounted for by the action of natural causes, and do not require the supposition of miracles nor the intervention of spirits or diabolical influences. He considers it as a fact fully established by his experiments, that the will, in certain states of the organism, can act at a distance on inert matter, and most of his work is devoted to ascertaining the laws and conditions under which this action manifests itself.

In 1855, M. Thury, a Professor at the Academy of Geneva, published a work,* in which he passed in review Count de Gasparin's experiments, and entered into full details of researches he had been simultaneously carrying on. Here, also, the trials were made with private friends, and were conducted with all the care which a scientific man could bring to bear on the subject. Space will not allow me to quote the valuable numerical results obtained by M. Thury, but from the following headings of some of his chapters, it will be seen that the enquiry was not conducted superficially:—Facts which Establish the Reality of the New Phenomenon; Mechanical Action rendered Impossible; Movements effected without Contact; The Causes; Conditions requisite for the Production and Action of the Force; Conditions for the Action with Respect to the Operators; The Will; Is a Plurality of Operators Necessary? Preliminary Requisites; Mental Condition of the Operators; Meteorological Conditions; Conditions with Respect to the Instruments Operated upon; Conditions relative to the Mode of Action of the Operators on the Instruments; Action of Substances interposed; Production and Transmission of the Force; Examination of the Assigned Causes; Fraud; Unconscious Muscular Action produced in a particular Nervous State; Electricity; Nervo-magnetism; M. de Gasparin's Theory of a Special Fluid; General Question as to the Action of Mind on Matter. 1st Proposition; In the ordinary conditions of the body the will only acts directly within the sphere of the organism. 2nd Proposition; Within the organism itself there are a series of mediate acts. 3rd Proposition: The substance on which the mind

* Geneva; Librairie Allemande de J. Kessmann. 1855.

all this might be equally applied
to such a table.

acts directly—the *psychode*—is only susceptible of very simple modification under the influence of the mind; Explanations which are based on the Intervention of Spirits. M. Thury refutes all these explanations, and considers the effects due to a peculiar substance, fluid, or agent, pervading, in a manner similar to the luminiferous ether of the scientist, all matter, nervous, organic, or inorganic—which he terms *psychode*. He enters into full discussion as to the properties of this state or form of matter, and proposes the term *ectenic force* (ἐκτένια, extension), for the power exerted when the mind acts at a distance through the influence of the psychode.*

There is likewise another case on record in which similar test experiments were tried, with like results, by a thoroughly competent observer. The late Dr. Robert Hare, in one of his works,† gives an engraving of an apparatus very similar to my own, by which the young man with whom he was experimenting was prevented from having any other communication with the apparatus except through water; yet, under these circumstances, the spring balance indicated the exertion of a force equal to 18 lbs. The details of this experiment were communicated by Dr. Hare, to the American Association for the Advancement of Science, at the meeting in August, 1855.

The references I now give afford an answer to the statement that these results must be verified by others. They have been verified over and over again. Indeed, my own experiments may be regarded merely as verifications of results already obtained and published by eminent scientific men in this and other countries.‡

But I was not content with this. I felt that having the opportunity of showing these phenomena to others, I might

* Professor Thury's ectenic and my psychic force are evidently equivalent terms. Had I seen his work three months ago I should have adopted his term. The suggestion of a similar hypothetical nervous fluid has now reached us from another and totally different source, expounded with distinct views, and couched in the language of one of the most important professions —I allude to the theory of a nervous atmosphere advanced by Dr. Benjamin W. Richardson, M.D., F.R.S., in the "Medical Times," No. 1088, May 6, 1871.

† "Experimental Investigation;" By Robert Hare, M.D., Emeritus Professor of Chemistry in the University of Pennsylvania, &c. New York: Partridge and Britton, 1858.

‡ The Report of the Dialectical Society on Spiritualism will appear in a few days, and it will be seen that the Investigation Committee, though commencing their experiments with the entire conviction that they should expose an imposture, have ended by affirming that they are convinced of the existence of a force emanating from the human organisation, by which motion may be imparted to heavy substances, and audible sounds made on solid bodies without muscular contact; they also state that this force is often directed by some intelligence.

at a future time be blamed did I not, once for all, take the very best means of bringing them before the notice of the scientific world. Accordingly I forwarded an account of my experiments to the Royal Society on June 15, 1871, and addressed myself to the two secretaries of the Royal Society, Professor Sharpey and Professor Stokes, inviting them to my house to meet Mr. Home, at the same time asking them to be prepared for negative results, and to come a second, or, if necessary, a third time, before forming a judgment.

Dr. Sharpey politely declined the invitation.

Professor Stokes replied that he thought there was a fallacy in my apparatus, and concluded by saying—

"The facts you mentioned in the paper were certainly at first sight very strange, but still possible modes of explanation occurred to me which were not precluded by what I read in the paper. If I have time when I go to London I will endeavour to call at your house. I don't want to meet anyone; my object being to scrutinise the apparatus, not to witness the effects."

To this I replied on June 20th; the following extracts are taken from my answer:—

"I am now fitting up apparatus in which contact is made through water only, in such a way that transmission of mechanical movement to the board is impossible; and I am also arranging an experiment in which Mr. Home will not touch the apparatus at all. This will only work when the power is very strong; but last night I tried an experiment of this kind, and obtained a considerable increase of tension on the spring balance when Mr. Home's hands were three inches off. With him the power is so great that I can work with large and crude materials, and measure the force in pounds. But I propose to make a delicate apparatus, with a mirror and reflected ray of light, to show fractions of grains. Then I hope to find this force is not confined to a few, but is, like the magnetic state, universal. The subject shall have a 'most scrupulously searching physical scrutiny,' and whatever results I obtain shall be published. I consider it my duty to send first to the Royal Society, for by so doing I deliberately stake my reputation on the truth of what I send. But will the Society (or the Committee*) accept my facts as facts, or will they require vouchers for my integrity? If my statements of fact are taken as correct, and only my interpretation or arrangements of apparatus objected to, then it would seem to be right to give me an opportunity of answering these objections before finally deciding. The other supposition—that my facts are incorrect—I cannot admit the discussion of till I am definitely assured that such is entertained.

"Mr. Home is coming here on Wednesday and Friday evenings: if you can come on either or both occasions at 8 p.m., I shall be glad to see you, or if you only wish to scrutinise the apparatus, I will be here at any time you like to name."

On the 28th of June another paper was sent to the Royal Society. Two days after, Professor Stokes wrote a letter, from which I quote:—

"As I was otherwise engaged so as not to be able conveniently to go to your house, I may as well mention the possible sources of error which occurred to me with reference to your first apparatus. I don't suppose they all exist;

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* Alluding to a rumoured rejection of my paper by the Committee of the Royal Society.

but it is evidently, as you yourself would freely admit, for the *assertor* of a new force to remove all sources of reasonable objection.

"The breadth of the foot of the board was, I think, 1½ or 2 inches, and the bell placed on it was, perhaps, 2 or 3 inches broad. (I can't carry the exact figures in my head.) Join the left edge* of the top of the bell, *a*, with the right hand edge, *b*, of the base of the bell, and let *e f* be the joining line. Then we may suppose the fingers to have pressed in any direction short of the limiting line *e f*. Also as the board was rigid, the fulcrum for aught we know may have been at *c*. From *c* let fall a perpendicular *c m* on the line *e f*. Then the pressure of the finger may have acted at the distance, *c m*, from the fulcrum. Also, as the base lay flat on the table and both were rigid, for aught we know, an infinitesimal, and therefore imperceptible, tilt communicated to the table at the time of trying the experiment may have shifted the fulcrum from the edge *d* to the edge *c*, so that the weight of the hand may have acted by an arm longer than before by *c d*, which would have contributed to the result.

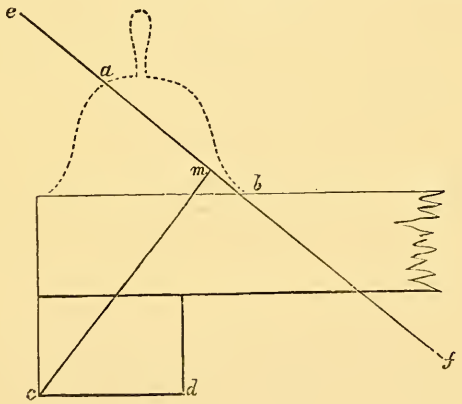
"In your second paper the uncertainty as to the broad bearing is removed. But when the hand was dipped into the water the pressure on the base of the glass vessel (after a little time if the connecting hole be narrow) is increased by the weight of the water displaced, and that would of course depress the balance.

"I don't think much of mere tremors, for it would require very elaborate appliances to prove that they were not due to a passing train or omnibus or to a tremor in the body of one of the company. . . . . What do you wish to be done with the papers!"

To this I replied as follows, on July 1st:—

"In your letter of the 30th ult., just received, you are quite right in saying that I would freely admit that 'the *assertor* of a new force should remove all sources of reasonable objection.' In your previous letter of the 19th of June, you write with equal fairness, that 'your opinion is that you (the R. S.) ought not to refuse to admit evidence of the existence of a hitherto unsuspected

FIG. 1 (half scale).



force; but that before printing anything on such a subject, you ought to require a most scrupulously searching physical scrutiny of the evidence adduced in favour of the existence of such a force.'

* The diagram referred to here is shown, drawn to scale, in my answer further on. The experiment under discussion is the one figured and described in the last number of the "Quarterly Journal of Science," page 345.

"You have now been good enough to explain to me in detail what the fallacy is which you think exists in my first experiments, and what you consider to be the possible sources of error in my subsequent trials.

"On re-drawing the diagram you give in your letter, Fig. 1, to the full size, supplying the deficient data, viz., the position of the shoulder, *a*, and the point, *b*, your line *c m* appears to be about 2·9 inches long; and, as you assume that the fulcrum shall be at *c*, the lever becomes one of the third order, the two forces acting respectively at $p = 2{\cdot}9$ inches, and at $q = 36$ inches from *c*. What power, P, must be exerted at *p* to overcome a resistance or weight, Q, of 6 lbs. at the end of the lever, *q*?

$$Pp = Qq.$$
$$\text{Hence, } P + 2{\cdot}9 = Q + 36.$$
$$\therefore\ P = 74{\cdot}5 \text{ lbs.}$$

Therefore, it would have required a force of 74·5 lbs. to have been exerted by Mr. Home to have produced the results, even if all your suppositions are granted; and, considering that he was sitting in a low easy chair, and four pairs of sharp, suspicious eyes were watching to see that he exerted no force at all, but kept the tips of his fingers lightly on the instrument, it is sufficiently evident that an exertion of this pressure was impossible. A few pounds vertical pressure was all he could have effected.

"Again, you are not justified in assuming that the fulcrum was at *c*. Granting that 'an infinitesimal and therefore imperceptible tilt' might, at the very first movement, have thrown it from *d* to *c*, it is evident that the movement would at once throw it forward again from *c* to *d*. To have failed to have done so, the tilt must have been so obvious as to have been detected at once.

"But, as I said in my last paper, I prefer to appeal to new experiments rather than argue about old ones, and hence my employment of the water for transmitting the force. The depth of water in the copper hemisphere was only 1½ inches, whilst the glass vessel was 9 inches in diameter.* I have just tried the experiment of immersing my hand to the very utmost in the copper vessel (Mr. Home only dipped in the tips of his fingers) and the rise of the level of the water is not sufficient to produce any movement whatever on the index of the balance, the friction of the apparatus being enough to absorb the ounce or two thus added to the weight. In my more delicate apparatus, this increase of hydrostatic pressure produces a decided movement of the spot of light, but this difficulty I shall overcome by placing the water vessel over the fulcrum, or on the short side of it.

"You say 'you don't think much of mere tremors,' as if in the other experiments described in my second paper the movements of the apparatus were only of this kind. This is not the case; the quivering of the apparatus always took place before the index moved, and the upward and downward motion of the board and index was of a very slow and deliberate character, occupying several seconds for each rise and fall; a tremor produced by passing vehicles is a very different thing from a steady vertical pull of from 4 to 8 lbs., lasting for several seconds.

"You say the session is now over, and ask what I wish to be done with the papers.

"Three years ago (June 27th, 1868), I sent a paper to the Society, 'On the Measurement of the Luminous Intensity of Light,' just after the session closed. It was not read till December 17th. My *wish* would be for a similar course to be adopted in the present instance, although I am scarcely sanguine enough to expect that so much notice will be taken of these communications. So many scientific men are now examining into these strange phenomena (including many Fellows of the Society), that it cannot be many years before the subject will be brought before the scientific world in a way that will enforce attention. I confess that, in sending in these papers to the Society, I have been actuated more by the desire of being the first scientific experimenter

* For a description of this apparatus, see p. 484.

who has ventured to take such a course, than by any particular desire that they should meet with immediate attention. I owe to the Society the first intimation of important scientific results, and these I shall continue to send, '*pour prendre date*,' if for no other reason."

"The Spectator" of July 22nd contained an editorial note, in which it is asserted that my paper was declined by the committee:—

"The Royal Society, they say, was quite open to communications advocating the existence of a force in nature as yet unknown, if such communications contained scientific evidence adequate to establish its probability; but that, looking to the inherent improbability of the case as stated by Mr. Crookes, and the *entire want of scientific precision* in the evidence adduced by him, the paper was not regarded as one deserving the attention of the Royal Society."

This paragraph not only states that my papers were declined, but proceeds to state the grounds of their rejection. The fact is, that a quorum of the committee of papers not having been present, the question was deferred to the next session in November, and on inquiry at Burlington House, I am informed by the Assistant-Secretary of the Royal Society that my papers, with others, are still awaiting the decision of the committee. Consequently the statement of a rejection was not only premature, but purely imaginary.

It appears, however, that there were some grounds for this statement, for in "The Spectator" of July 29th, 1871, the editor replies as follows:—

"Our note was not founded on any mere rumour. The words we used contained an exact copy of the words conveyed to us as used, not, as we inadvertently stated by the committee, but by one of the secretaries, Professor Stokes, who in the absence of a quorum, exercised *pro tempore* the usual discretionary authority in regard to papers offered."

I am unable to explain how it is that Professor Stokes's statements to me and to the editor of "The Spectator" bear so different an interpretation, or why a weekly newspaper was chosen for first conveying to me a decision of the committee of papers of the Royal Society.

At the urgent request of gentlemen on the committee of section A, I communicated a paper consisting of about sixteen closely-written pages to the British Association, in which I recounted some of the experiments described in the present paper. Section A referred the paper to a committee to decide whether it should be read. Professor Stokes afterwards handed to me the following document:—

"*Report on Mr. Crookes's Paper.*

August 7, 1871.

"The paper having been placed in my hands about ten o'clock, and a decision wanted in writing by a quarter to eleven, I have been obliged to be hasty.

"The subject *seems to be investigated in a philosophical spirit*, and I do not

see the explanation of the result of the first class of experiments, while at the same time I am not prepared to give in my adhesion without a thorough sifting by more individuals than one. I don't see much use discussing the thing in the sections, crowded as we already are; but if a small number of persons in whom the public would feel confidence choose to volunteer to act as members of a committee for investigating the subject, I don't see any objection to appointing such committee. I have heard too much of the tricks of Spiritualists to make me willing to give my time to such a committee myself.

"G. G. STOKES."

Whilst I cannot but regret that a physicist of such eminence as Professor Stokes should "be hasty," in deciding on the merits of a paper which it is physically impossible he could have even once read through, I am glad to find that he no longer continues to speak of the "entire want of scientific precision in the evidence adduced" by me, but rather admits that "the subject seems to be investigated in a philosophical spirit."

In submitting these experiments, it will not seem strange that I should consider them final until rebutted by arguments also drawn from facts, and that I should seek to know on what grounds contra-statements are founded. Professor Allen Thomson, at the recent meeting of the British Association, remarked that no course of inquiry into the matter before us "can deserve the name of study or investigation." And why not? On the other hand, Professor Challis, of Cambridge, writes, "In short, the testimony has been so abundant and consentaneous, that either the facts must be admitted to be such as are reported, or the possibility of certifying facts by human testimony must be given up." It is certainly not too much to suppose that Dr. Thomson had some grounds for his statement; and, indeed, "I have," he owns, "been fully convinced of this (the fallacies of spiritualistic demonstration) by repeated examinations;" but where are the results of his investigations to be found? They must be very conclusive to warrant him in the use of such expressions as "a few men of acknowledged reputation in some departments of science have surrendered their judgments to these foolish dreams, *otherwise* appearing to be within the bounds of sanity." If Dr. Thomson's dogmatic denial arises from the mere strangeness of the facts I have set forth, what can he think of the address of the President for this year. Surely the conception of a nerve-force is no more difficult than that "of the inner mechanism of the atom;" and again, any investigation, be it worthy the name or not, bearing on a matter in which eminent men have avowed their belief, which takes a leading rank among the social questions of the day,

and which numbers its adherents by millions, is surely as full of merit, and as instructive to all, as hypothetical inquiries into "interatomic atmospheres" and "gyrating interatomic atoms." Professor Huxley has observed, "If there is one thing clear about the progress of modern science, it is the tendency to reduce all scientific problems, except those that are purely mathematical, to problems in molecular physics—that is to say, to attractions, repulsions, motions, and co-ordination of the ultimate particles of matter! Yet these ultimate particles, molecules, or atoms, are creatures of the imagination, and as pure assumptions as the spirits of the spiritualist." But perhaps Dr. Allen Thomson's respect for mathematics is so great that he is blind to actuality. It does not speak well for modern scientific philosophy that, after the startling revelations of the spectroscope during the last decade, investigations should be scouted because they pertain to an ulterior state of things of which at present we have little idea. That I have furnished no dynamic equivalent of psychic force, or given no formulæ for the variable intensity of Mr. Home's power, is certainly no argument whatever against the existence of such a force. Men thought before the syllogism was invented, and, strange as it may seem to some minds, force existed before its demonstration in mathematical formulæ.

As an answer to Professor Balfour Stewart's rather bold conjecture, that Mr. Home possesses great electro-biological power (whatever that may mean), by which he influences those present, I point to the curves illustrating this paper; however susceptible the *persons* in the room might have been to that assumed influence, it will hardly be contended that Mr. Home biologised the recording instruments.

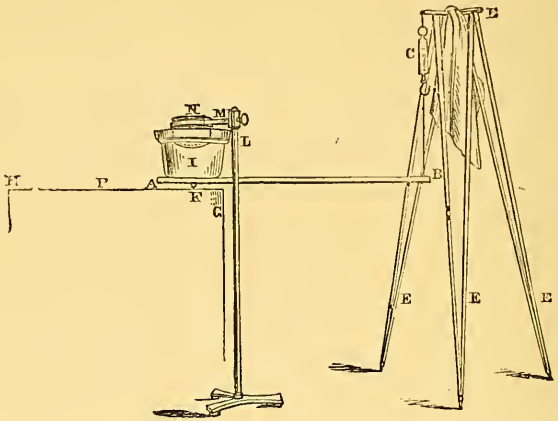
I will not occupy more time with personal matters, or with explanations forced from me in self-defence against uncourteous commentaries based on unjust misrepresentations; but I will proceed to describe the experiments, most of which, I may remark, might have been witnessed by Professor Stokes and Professor Sharpey, had they accepted the invitations I gave them.

On trying these experiments for the first time, I thought that actual contact between Mr. Home's hands and the suspended body whose weight was to be altered was essential to the exhibition of the force; but I found afterwards that this was not a necessary condition, and I therefore arranged my apparatus in the following manner:—

The accompanying cuts (Figs. 2, 3, 4) explain the arrangement. Fig. 2 is a general view, and Figs. 3 and 4

show the essential parts more in detail. The reference letters are the same in each illustration. A B is a mahogany board, 36 inches long by 9½ inches wide, and 1 inch thick. It is suspended at the end, B, by a spring balance, C,

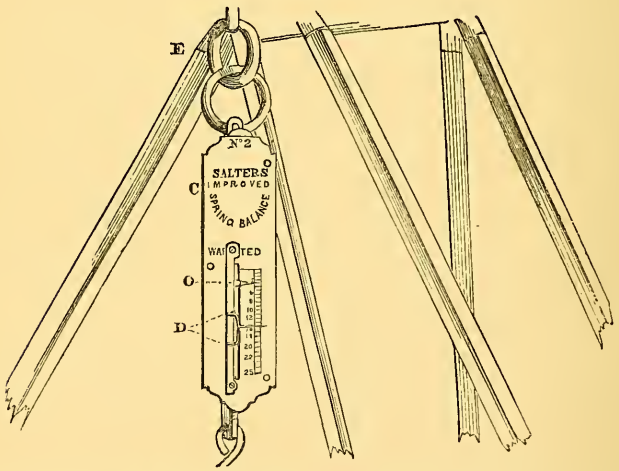
FIG. 2.



furnished with an automatic register, D. The balance is suspended from a very firm tripod support, E.

The following piece of apparatus is not shown in the figures. To the moving index, O, of the spring balance, a

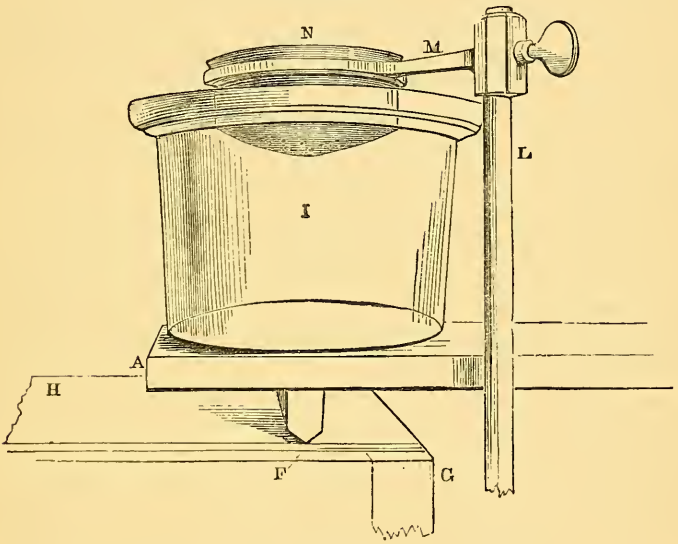
FIG. 3



fine steel point is soldered, projecting horizontally outwards. In front of the balance, and firmly fastened to it, is a

grooved frame carrying a flat box similar to the dark box of a photographic camera. This box is made to travel by clock-work horizontally in front of the moving index, and it contains a sheet of plate-glass which has been smoked over a flame. The projecting steel point impresses a mark on this smoked surface. If the balance is at rest, and the clock set going, the result is a perfectly straight horizontal line. If the clock is stopped and weights are placed on the

FIG. 4.



end B of the board, the result is a vertical line, whose length depends on the weight applied. If, whilst the clock draws the plate along, the weight of the board (or the tension on the balance) varies, the result is a curved line, from which the tension in grains at any moment during the continuance of the experiments can be calculated.

The instrument was capable of registering a diminution of the force of gravitation as well as an increase ; registrations of such a diminution were frequently obtained. To avoid complication, however, I will only here refer to results in which an increase of gravitation was experienced.

The end B of the board being supported by the spring balance, the end A is supported on a wooden strip, F, screwed across its lower side and cut to a knife edge (see Fig. 4). This fulcrum rests on a firm and heavy wooden

stand, G H. On the board, exactly over* the fulcrum, is placed a large glass vessel filled with water, I. L is a massive iron stand, furnished with an arm and a ring, M N, in which rests a hemispherical copper vessel perforated with several holes at the bottom.

The iron stand is 2 inches from the board A B, and the arm and copper vessel, M N, are so adjusted that the latter dips into the water $1\frac{1}{2}$ inches, being $5\frac{1}{2}$ inches from the bottom of I, and 2 inches from its circumference. Shaking or striking the arm M, or the vessel N, produces no appreciable mechanical effect on the board, A B, capable of affecting the balance. Dipping the hand to the fullest extent into the water in N does not produce the least appreciable action on the balance.

As the mechanical transmission of power is by this means entirely cut off between the copper vessel and the board A B, the power of muscular control is thereby completely eliminated.

For convenience I will divide the experiments into groups 1, 2, 3, &c., and I have selected one special instance in each to describe in detail. Nothing, however, is mentioned which has not been repeated more than once, and in some cases verified, in Mr. Home's absence, with another person possessing similar powers.

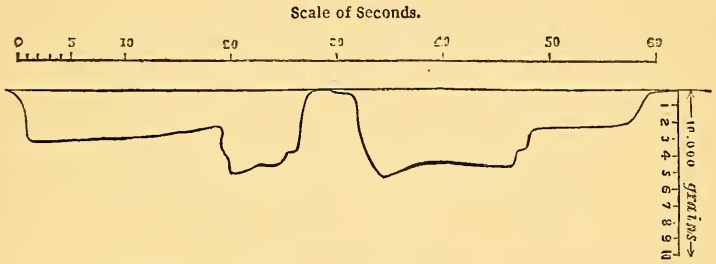
There was always ample light in the room where the experiments were conducted (my own dining-room) to see all that took place.

Experiment I.—The apparatus having been properly adjusted before Mr. Home entered the room, he was brought in, and asked to place his fingers in the water in the copper vessel, N. He stood up and dipped the tips of the fingers of his right hand in the water, his other hand and his feet being held. When he said he felt a power, force, or influence, proceeding from his hand, I set the clock going, and almost immediately the end B of the board was seen to descend slowly and remain down for about 10 seconds; it then descended a little further, and afterwards rose to its normal height. It then descended again, rose suddenly, gradually sunk for 17 seconds, and finally rose to its normal height, where it remained till the experiment was concluded. The lowest point marked on the glass was equivalent to a direct pull of about 5000 grains. The accompanying figure (5) is a copy of the curve traced on the glass.

* In my first experiments with this apparatus, referred to in Professor Stokes's letter and my answer (page 479), the glass vessel was not quite over the fulcrum, but was nearer B.

Experiment II.—Contact through water having proved to be as effectual as actual mechanical contact, I wished to see if the power or force could affect the weight, either through other portions of the apparatus or through the air. The glass vessel and iron stand, &c., were therefore removed,

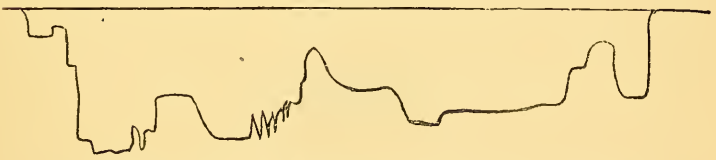
FIG. 5.



The horizontal scale of seconds shows the time occupied in the movements, the experiment lasting one minute. The vertical scale shows the tension in grains exerted on the balance at any moment.

as an unnecessary complication, and Mr. Home's hands were placed on the stand of the apparatus at P (Fig. 2). A gentleman present put his hand on Mr. Home's hands, and his foot on both Mr. Home's feet, and I also watched him closely all the time. At the proper moment the clock was

FIG. 6.

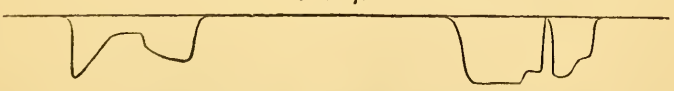


In this and the two following figures the scales, both vertical and horizontal, are the same as in Fig. 5.

again set going; the board descended and rose in an irregular manner, the result being a curved tracing on the glass, of which Fig. 6 is a copy.

Experiment III.—Mr. Home was now placed one foot from the board A B, on one side of it. His hands and feet

FIG. 7.

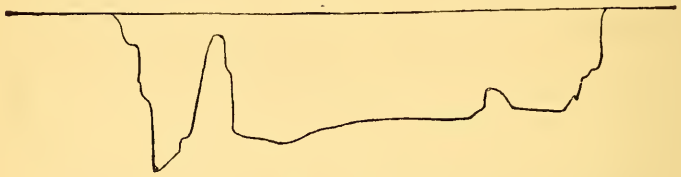


were firmly grasped by a bystander, and another tracing, of which Fig. 7 is a copy, was taken on the moving glass plate.

Experiment IV.—(Tried on an occasion when the power was stronger than on the previous occasions). Mr. Home was now placed 3 feet from the apparatus, his hands and feet being tightly held. The clock was set going when he gave the word, and the end B of the board soon descended, and again rose in an irregular manner, as shown in Fig. 8.

The following series of experiments were tried with more delicate apparatus, and with another person, a lady, Mr. Home being absent. As the lady is non-professional, I do

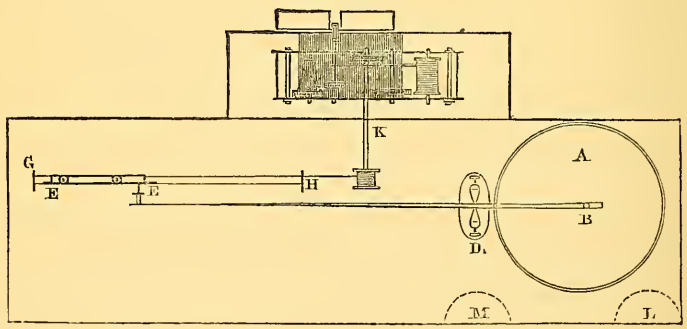
FIG. 8.



not mention her name. She has, however, consented to meet any scientific men whom I may introduce for purposes of investigation.

A piece of thin parchment, A, Figs. 9 and 10, is stretched tightly across a circular hoop of wood. B C is a light lever turning on D. At the end B is a vertical needle point touching the membrane A, and at C is another needle point, projecting

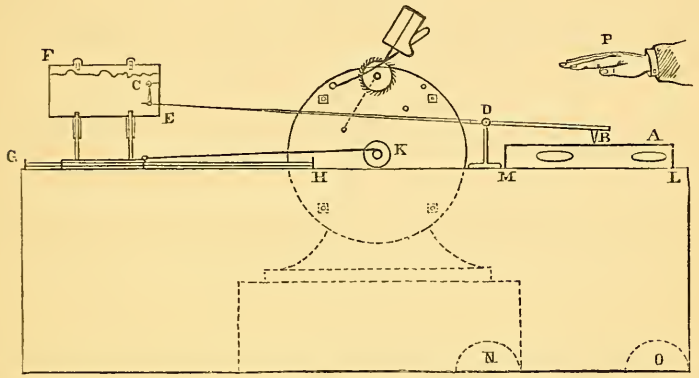
FIG. 9. (Plan.)



horizontally and touching a smoked glass plate, E F. This glass plate is drawn along in the direction H G by clock-work, K. The end B of the lever is weighted so that it shall quickly follow the movements of the centre of the disc, A. These movements are transmitted and recorded on the glass plate E F, by means of the lever and needle

point C. Holes are cut in the side of the hoop to allow a free passage of air to the under side of the membrane. The apparatus was well tested beforehand by myself and others, to see that no shaking or jar on the table or support would interfere with the results: the line traced by the point C

FIG. 10. (Section.)



on the smoked glass was perfectly straight in spite of all our attempts to influence the lever by shaking the stand or stamping on the floor.

Experiment V.—Without having the object of the instrument explained to her, the lady was brought into the room and asked to place her fingers on the wooden stand at the points L M, Fig. 9. I then placed my hands over hers to enable me to detect any conscious or unconscious movement on her part. Presently percussive noises were heard on the parchment resembling the dropping of grains of sand on its surface. At each percussion a fragment of graphite which I had placed on the membrane was seen to be projected upwards about 1-50th of an inch, and the end C of the lever moved slightly up and down. Sometimes the sounds were as rapid as those from an induction-coil, whilst at others they were more than a second apart. Five or six tracings were taken, and in all cases a movement of the end C of the lever was seen to have occurred with each vibration of the membrane.

In some cases the lady's hands were not so near the membrane as L M, but were at N O, Fig. 10.

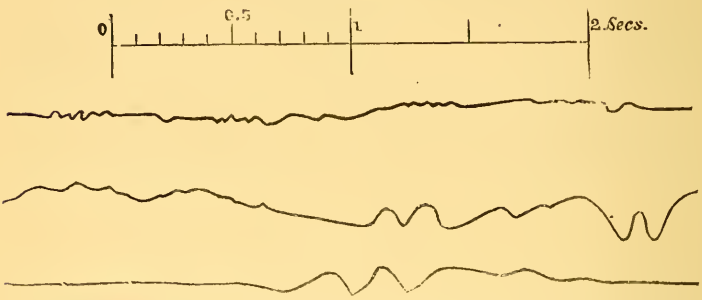
The accompanying Fig. 11 gives tracings taken from the plates used on these occasions.

Experiment VI.—Having met with these results in Mr. Home's absence, I was anxious to see what action would be produced on the instrument in his presence.

Accordingly I asked him to try, but without explaining the instrument to him.

FIG. 11.

Scale of Seconds.



I grasped Mr. Home's right arm above the wrist and held his hand over the membrane, about 10 inches from its surface, in the position shown at p, Fig. 10. His other hand was held by a friend. After remaining in this position for about half a minute, Mr. Home said he felt some influence passing. I then set the clock going, and we all saw the index, C, moving up and down. The movements were much slower than in the former case, and were almost entirely unaccompanied by the percussive vibrations then noticed.

Figs. 12 and 13 show the curves produced on the glass on two of these occasions.

Figs. 11, 12, 13 are magnified.

These experiments *confirm beyond doubt* the conclusions at which I arrived in my former paper, namely, the existence of a force associated, in some manner not yet explained, with the human organisation, by which force, increased weight is capable of being imparted to solid bodies without physical contact. In the case of Mr. Home, the development of this force varies enormously, not only from week to week, but from hour to hour; on some occasions the force is inappreciable by my tests for an hour or more, and then suddenly reappears in great strength. It is capable of acting at a distance from Mr. Home (not unfrequently as far as two or three feet), but is always strongest close to him.

Being firmly convinced that there could be no manifestation of one form of force without the corresponding expenditure of some other form of force, I for a long time searched

in vain for evidence of any force or power being used up in the production of these results.

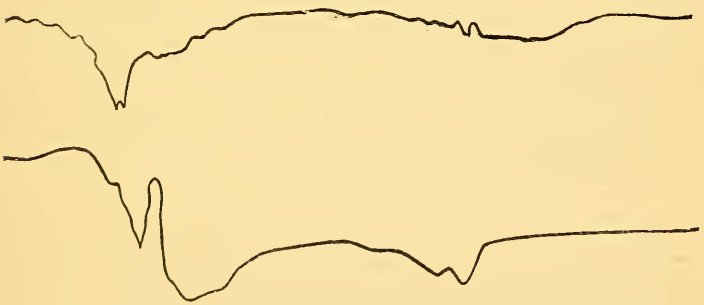
Now, however, having seen more of Mr. Home, I think I perceive what it is that this psychic force uses up for its development. In employing the terms *vital force*, or *nervous energy*, I am aware that I am employing words which convey very different significations to many investigators; but after witnessing the painful state of nervous and bodily prostration in which some of these experiments have left

FIG. 12.

Mr. Home—after seeing him lying in an almost fainting condition on the floor, pale and speechless—I could scarcely doubt that the evolution of psychic force is accompanied by a corresponding drain on vital force.

I have ventured to give this new force the name of *Psychic Force*, because of its manifest relationship to certain psychological conditions, and because I was most desirous to avoid the foregone conclusions implied in the title under

FIG. 13.



which it has hitherto been claimed as belonging to a province beyond the range of experiment and argument. But having found that it is within the province of purely scientific research, it is entitled to be known by a scientific name, and I do not think a more appropriate one could have been selected.

To witness exhibitions of this force it is not necessary to have access to known psychics. The force itself is probably possessed by all human beings, although the individuals endowed with an extraordinary amount of it are doubtless

few. Within the last twelve months I have met in private families five or six persons possessing a sufficiently vigorous development to make me feel confident that similar results might be produced through their means to those here recorded, provided the experimentalist worked with more delicate apparatus, capable of indicating a fraction of a grain instead of recording pounds and ounces only.

As far as my other occupations will permit, I purpose to continue the experiments in various forms, and I will report from time to time their results. In the meanwhile I trust that others will be induced to pursue the investigation in its scientific form. It should, however, be understood that, equally with all other scientific experiments, these researches must be conducted in strict compliance with the conditions under which the force is developed. As it is an indispensable condition of experiments with frictional electricity that the atmosphere should be free from excess of moisture, and that no conducting medium should touch the instrument while the force is being generated, so certain conditions are found to be essential to the production and operation of the Psychic force, and unless these precautions are observed the experiments will fail. I am emphatic on this point, because unreasonable objections have sometimes been made to the Psychic Force that it is not developed under adverse conditions dictated by the experimentalist, who, nevertheless, would object to conditions being imposed upon himself in the exhibition of any of his own scientific results. But I may add, that the conditions required are very few, very reasonable, and in no way obstruct the most perfect observation and the application of the most rigid and accurate tests.

Just before going to press I have received from my friend Professor Morton an advance sheet of the "Journal of the Franklin Institute," containing some remarks on my last paper by Mr. Coleman Sellers, a leading scientific engineer of the United States. The essence of his criticism is contained in the following quotation:—

"On page 341" (of the Quarterly Journal of Science) "we have given a mahogany board '36 inches long by 9½ inches wide, and 1 inch thick,' with 'at each end a strip of mahogany 1½ inches wide screwed on, forming feet.' This board was so placed as to rest with one end on the table, the other suspended by a spring balance, and, so suspended, it recorded a weight of 3 pounds; *i.e.*, a *mahogany* board of the above dimensions is shown to weigh 6 pounds—3 pounds on the balance and 3 pounds on the table. A mechanic used to handling wood wonders how this may be. He looks through his

limited library and finds that scientific men tell him that such a board should weigh about 13½ pounds. Did Mr. Crookes make this board himself? or did Mr. Home furnish it as one of his pieces of apparatus? . . . . It would have been more satisfactory if Mr. Crookes had stated, in regard to this board, who made it. . . . Let it be discovered that the 6 pound mahogany board was furnished by Mr. Home and the experiments will not be so convincing."

My experiments must indeed be convincing if so accomplished a mechanician as Mr. Coleman Sellers can find no worse fault with them than is expressed in the comments I have quoted. He writes in so matter-of-fact a manner, and deals so plausibly with dimensions and weights, that most persons would take it for granted that I really *had* committed the egregious blunder he points out.

Will it be believed, therefore, that my mahogany board does *weigh only 6 pounds?* Four separate balances in my own house tell me so, and my greengrocer confirms the fact.

It is easy to perceive into what errors a "mechanic" may fall when he relies for practical knowledge on his "limited library" instead of appealing to actual experiment.

I am sorry I cannot inform Mr. Sellers who made my mahogany board. It has been in my possession about sixteen years; it was originally cut off a length in a wood-yard; it became the stand of a spectrum camera, and as such is described with a cut in the "Journal of the Photographic Society" for January 21, 1856 (vol. ii., p. 293). It has since done temporary duty in the arrangement of various pieces of apparatus in my physical laboratory, and was selected for these particular experiments owing to its shape being more convenient than that of other available pieces of wood.

But is it seriously expected that I should answer such a question as "Did Mr. Home furnish the board?" Will not my critics give me credit for the possession of some amount of common sense? And can they not imagine that obvious precautions, which occur to them as soon as they sit down to pick holes in my experiments, are not unlikely to have also occurred to me in the course of prolonged and patient investigation?

The answer to this as to all other like objections is, Prove it to be an error by showing where the error lies, or, if a trick, by showing *how* the trick is performed. Try the experiment fully and fairly. If then fraud be found, expose it; if it be a truth, proclaim it. This is the only scientific procedure, and this it is that I purpose steadily to pursue.

PSYCHIC FORCE AND MODERN SPIRITUALISM:

A REPLY TO THE "QUARTERLY REVIEW."

[In presenting this article to the public, let me take the opportunity of explaining the exact position which I wish to occupy in respect to the subject of Psychic Force and Modern Spiritualism. I have desired to examine the phenomena from a point of view as strictly physical as their nature will permit. I wish to ascertain the laws governing the appearance of very remarkable phenomena which at the present time are occurring to an almost incredible extent. That a hitherto unrecognised form of Force—whether it be called psychic force or x force is of little consequence—is involved in this occurrence, is not with me a matter of opinion, but of absolute knowledge; but the nature of that force, or the cause which immediately excites its activity, forms a subject on which I do not at present feel competent to offer an opinion. I wish, at least for the present, to be considered in the position of an electrician at Valentia, examining by means of appropriate testing instruments, certain electrical currents and pulsations passing through the Atlantic cable; independently of their causation, and ignoring whether these phenomena are produced by imperfections in the testing instruments themselves—whether by earth currents or by faults in the insulation—or whether they are produced by an intelligent operator at the other end of the line.

WILLIAM CROOKES.

LONDON, *Dec.*, 1871.]

THE *Quarterly Review* for October contains an article under the title of "Spiritualism and its Recent Converts," in which my investigations and those of other scientific men are severely handled in the spiteful bad old

style which formerly characterised this periodical, and which I thought had happily passed away. It has reverted to the unjustifiable fashion of testing truth by the character of individuals. Had the writer contented himself with fair criticism, however sharply administered, I should have taken no public notice of it, but have submitted with the best grace I could. But with reference to myself he has further mis-stated and distorted the aim and nature of my investigations, and written of me personally as confidently as if he had known me from boyhood and was thoroughly acquainted with every circumstance of my educational and scientific career, so that I feel constrained to protest against his manifest unfairness, prejudice, and incapacity to deal with the subject and my connection with it. Although other investigators, including Dr. Huggins, Serjeant Cox, Mr. Varley, and Lord Lindsay, are included in the indictment and found guilty with extenuating circumstances, for me he can feel no tenderness, which, were it not for my recent sins, he is good enough to observe he "might have otherwise felt for a man who has in his previous career made creditable use of his very limited opportunities." The other offenders who are attacked can well take care of themselves; let me now vindicate myself.

It was my good or evil fortune, as the case may be, to have an hour's conversation, if it may be so termed when the talking was all on one side, with the Quarterly Reviewer in question, when I had an opportunity of observing the curiously dogmatic tone of his mind and of estimating his incapacity to deal with any subject conflicting with his prejudices and prepossessions. At the last meeting of the British Association at Edinburgh we were introduced—he as a physiologist who had enquired into the matter fifteen or twenty years ago; I as a scientific investigator of a certain department of the subject; here is a sketch of our interview, accurate in substance if not identical in language.

"Ah! Mr. Crookes," said he, "I am glad I have an opportunity of speaking to you about this Spiritualism you have been writing about. You are only wasting your time. I devoted a great deal of time many years ago to mesmerism, clairvoyance, electro-biology, table-turning, spirit-rapping, and all the rest of it, and I found there was nothing in it. I explained it all in my article I wrote in the *Quarterly Review*. I think it a pity you have written anything on this subject before you made yourself intimately acquainted with my writings and my views on the subject. I have exhausted it."

"But, Sir," interposed I, "you will allow me to say you are mistaken, if—"

"No, no!" interrupted he, "I am not mistaken. I know what you would say. But it is quite evident from what you have just remarked, that you allowed yourself to be taken in by these people when you knew nothing whatever of the perseverance with which I and other competent men, eminently qualified to deal with the most difficult problems, had investigated these phenomena. You ought to have known that I explain everything you have seen by 'unconscious cerebration' and 'unconscious muscular action'; and if you had only a clear idea in your mind of the exact meaning of these two phrases, you would see that they are sufficient to account for everything."

"But, Sir—"

"Yes, yes; my explanations would clear away all the difficulties you have met with. I saw a great many mesmerists and clairvoyants, and it was all done by 'unconscious cerebration.' Whilst as to table-turning, everyone knows how Faraday put down that. It is a pity you were unacquainted with Faraday's beautiful indicator; but, of course, a person who knew nothing of my writings would not have known how he showed that unconscious muscular action was sufficient to explain all these movements."

"Pardon me," I interrupted, "but Faraday himself showed ——." But it was in vain, and on rolled the stream of unconscious egotism.

"Yes, of course; that is what I said. If you had known of Faraday's indicator and used it with Mr. Home, he would not have been able to go through his performance."

"But how," I contrived to ask, "could the indicator have served, seeing that neither Mr. Home nor anyone else touched the—"

"That's just it. You evidently know nothing of the indicator. You have not read my articles and explanations of all you saw, and you know nothing whatever of the previous history of the subject. Don't you think you have compromised the Royal Society? It is a great pity that you should be allowed there to revive subjects I put down ten years ago in my articles, and you ought not to be permitted to send papers in. However, we can deal with them." Here I was fain to keep silence. Meanwhile, my infallible interlocutor continued—

"Well, Mr. Crookes, I am very pleased I have had this opportunity of hearing these explanations from yourself. One learns so much in a conversation like this, and what

you say has confirmed me on several points I was doubtful about before. Now, after I have had the benefit of hearing all about it from your own lips, I am more satisfied than ever that I have been always right, and that there is nothing in it but unconscious cerebration and muscular action."

At this juncture some good Samaritan turned the torrent of words on to himself; I thankfully escaped with a sigh of relief, and my memory recalled my first interview with Faraday, when we discussed table-turning and his contrivance to detect the part played by involuntary muscular effort in the production of that phenomenon. How different his courteous, kindly, candid demeanour towards me in similar circumstances compared with that of the Quarterly Reviewer!

Now, let me ask, what authority has the reviewer for designating me a recent convert to Spiritualism? Nothing that I have ever written can justify such an unfounded assumption. Indeed the dissatisfaction with which many spiritualists have received my articles clearly proves that they consider me unworthy of joining their fraternity. In my first published article the following sentences occur:—

> "Hitherto I have seen nothing to convince me of the 'spiritual' theory. In such an enquiry the intellect demands that the spiritual proof must be absolutely incapable of being explained away; it must be so strikingly and convincingly true that we cannot, dare not deny it."
>
> "Accuracy and knowledge of detail stand foremost amongst the great aims of modern scientific men. No observations are of much use to the student of science unless they are truthful and made under test conditions; and here I find the great mass of spiritualistic evidence to fail. In a subject which, perhaps, more than any other lends itself to trickery and deception, the precautions against fraud appear to have been, in most cases, totally insufficient."
>
> "I confess that the reasoning of some spiritualists would almost seem to justify Faraday's severe statement that many dogs have the power of coming to much more logical conclusions. Their speculations utterly ignore all theories of force being only a form of molecular motion, and they speak of Force, Matter, and Spirit as three distinct entities."

In a subsequent paper, I said that my experiments appeared to establish the existence of a new force connected, in some unknown manner, with the human organisation; but that it would be wrong to hazard the most vague hypothesis respecting the cause of the phenomena, the nature of this force, and the correlation existing between it and the other forces of nature. "Indeed," said I, "it is the duty of the enquirer to abstain altogether from framing theories until he has accumulated a sufficient number of facts to form a substantial basis upon which to reason." New forces must be found, or mankind must remain sadly

ignorant of the mysteries of nature. We are unacquainted with a sufficient number of forces to do the work of the universe.

In a third paper, I brought forward many quotations from previous experimentalists, which showed that they did *not* ascribe the phenomena to Spiritualism. I then said that the name Psychic had been chosen for the subject "because I was most desirous to avoid the foregone conclusions implied in the title under which it has hitherto been claimed as belonging to a province beyond the range of experiment and argument."

Do these quotations look like Spiritualism? Does the train of thought running through them justify the Quarterly Reviewer in saying that "the lesson afforded by the truly scientific method followed by this great master of experimental philosophy (Faraday) . . . should not have been lost upon those who profess to be his disciples. But it has been entirely disregarded . . . by men from whom better things might have been expected"?

I have devoted my enquiry entirely to those physical phenomena in which, owing to the circumstance of the case, unconscious muscular action, self deception, or even wilful fraud, would be rendered inoperative. I have not attempted to investigate except under such conditions of place, person, light, position, and observation, that contact was either physically impossible or could take place only under circumstances in which the unconscious or wilful movement of the hands could not vitiate the experiment. The experiments being tried in my own house, assumption of pre-arranged mechanical contrivances to assist the "medium" was out of the question.

The most curious thing regarding this article in the *Quarterly* is that the writer himself is a believer in a *new force*, and he arrogantly tries to put down any attempt to bring forward another. He refers to various hypotheses—to Sir William Hamilton's "latent thought," Dr. Laycock's "reflex action of the brain," and Carpenter's "ideo-motor principle." The reviewer adopts, without hesitation, Carpenter's hypothesis as the true and universal solvent of the phenomena in question, notwithstanding that this hypothesis is rejected by the physiologists most competent to judge it.

The whole tenor of the article, the numerous references to various "spiritual" phenomena, and the account of some of the reviewer's own experiences, show that he knows little or nothing of any such phenomena as those which I

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have commenced to investigate. He refers to mesmerism, curative influence, "planchette" writing, table-tilting, table-turning, and to the messages obtained by these means. When he does not impute fraud, he explains the physical movements by the hypothesis of "unconscious muscular action," and the intelligence which sometimes controls these movements, delivers messages, etc., by "unconscious cerebration" or "ideo-motor action."

Now these explanations are possibly sufficient to account for much that has come under the personal cognisance of the reviewer. I will do him the justice to believe that, as he affirms, he did take every opportunity within his reach of witnessing the higher phenomena of "Spiritualism," and that on various occasions he met with results which were entirely unsatisfactory. The error into which he falls is this: Because he saw nothing that he thought worth following up, therefore it is impossible anyone else can be more fortunate. Because he and his scientific friends were following out the subject for more than a dozen years, therefore my own friends and myself deserve reprobation for pursuing the inquiry for about as many months.

According to this reasoning science would proceed very slowly. How often do we find instances of an abandoned investigation being taken up by another inquirer, who, more fortunate in his opportunities, carries it to a successful issue.

The reviewer has no grounds whatever for asserting that—

> "He (Mr. Crookes) altogether ignores the painstaking and carefully conducted researches which had led men of the highest scientific eminence to an unquestioning rejection of the whole of those higher phenomena of 'mesmerism' which are now presented under other names as the results of 'spiritual' or 'psychic' agency."

Now, I am quite familiar with these researches and with the various explanations of them so elaborately set forth by Dr. Carpenter and others. I made no reference to them, simply because the phenomena which came under their notice are entirely different from the phenomena I have examined. During my experiments I have seen plenty of instances of planchette writing, table-turning, table-tilting, and have received messages innumerable, but I have not attempted their investigation, mainly, for two reasons; first, because I shrank from the enormous difficulty and the consumption of time necessary to carry out an inquiry more physiological than physical; and, secondly, because little came under my notice in the way of messages or table-tilts which I could not account for.

My reviewer objects to the accordion being tried in a cage under the table. My object is easily explained. I must use my own methods of experiment. I deemed them good under the circumstances, and if the reviewer had seen the experiment before complaining it would have been more like a scientific man. But the cage is by no means essential, although, in a test experiment, it is an additional safeguard. On several subsequent occasions the accordion has played over the table, and in other parts of my room away from a table, the keys moving and the bellows action going on. An accordion was selected because it is absolutely impossible to play tricks with it when held in the manner indicated. I flatly deny that, held by the end away from the keys, the performance on an accordion "*with one hand* is a juggling trick often exhibited at country fairs," unless special mechanism exists for the purpose. Did ever the reviewer or anyone else witness this phenomenon at a country fair or elsewhere? The statement is only equalled in absurdity by the argument of a recent writer, who, in order to prove that the accounts of Mr. Home's levitations could not be true, says, "An Indian juggler could sit down in the middle of Trafalgar Square, and then slowly and steadily rise in the air to a height of five or six feet, still sitting, and as slowly come down again." Curious logic this, to argue that a certain phenomenon is impossible to Mr. Home because a country bumpkin or an Indian juggler can produce it.

In the experiment with the board and spring balance the reviewer says that "the whole experiment is vitiated by the absence of any determination of the *actual downward pressure* of Mr. Home's fingers."

I maintain that this determination is as unnecessary as a determination of his "downward pressure" on the chair on which he was sitting, or on his boots when standing. In reference to this point I said:—

> "Mr. Home placed the tips of his fingers *lightly on the extreme end* of the mahogany board which was resting on the support."
>
> "In order to see whether it was possible to produce much effect on the spring balance by pressure at the place where Mr. Home's fingers had been, I stepped upon the table and stood on one foot at the end of the board. Dr. Huggins, who was observing the index of the balance, said that the whole weight of my body (140 lbs.) so applied only sunk the index 1½ lbs., or 2 lbs. when I jerked up and down. Mr. Home had been sitting in a low easy-chair, and could not, therefore, had he tried his utmost, have exerted any material influence on these results. I need scarcely add that his feet as well as his hands were closely guarded by all in the room."
>
> "The wooden foot being 1½ inches wide, and resting flat on the table, it is evident that *no amount of pressure* exerted within this space of 1½ inches could produce any action on the balance."

But as this objection had been made by several persons, I devised certain experiments so as to entirely eliminate mechanical contact, and these experiments were fully described in my last paper.

To show the singular inaccuracy of the reviewer's statements and inferences, I give below, in parallel columns, quotations from the *Quarterly Review*, to mark the contrast between its unfair statements and my own actual language as printed in the *Quarterly Journal of Science.*

(*Quarterly Review, Oct.*, 1871.)

"He admitted that he had not employed the tests which men of science had a right to demand before giving credence to the genuineness of those phenomena."

"He entered upon the inquiry, of which he now makes public the results, *with an avowed foregone conclusion of his own.*"

"This obviously deprives his 'conviction of their objective reality' of even that small measure of value to which his scientific character might have given it a claim if his testimony had been impartial."

(*Quarterly Journal of Science July*, 1870.)

"My whole scientific education has been one long lesson in exactness of observation, and I wish it to be distinctly understood that this firm conviction [of the genuineness of certain phenomena] is the *result of most careful investigation.*"

"In the present case I prefer to enter upon the inquiry with no preconceived notions whatever as to what can or cannot be." . . . "At first, I believed that the whole affair was a superstition, or at least an unexplained trick." . . . "I should feel it to be a great satisfaction if I could bring out light in any direction, and I may safely say that *I care not in what direction.*" . . . "I cannot, at present, hazard even the most vague hypothesis as to the cause of the phenomena."

"*Views or opinions I cannot be said to possess* on a subject which I do not pretend to understand." . . . . . "The increased employment of scien- scientific methods will promote exact observation and greater love of truth among enquirers, and will produce a race of observers who will drive the worthless residuum of Spiritualism hence into the unknown limbo of magic and necromancy."

On page 351 the reviewer insinuates that the early scientific training of myself and fellow-workers has been deficient. Speaking for myself, I may say that my scientific training could not have well commenced earlier than it did. Some time before I was sixteen I had been occupied in experimental work in a private physical laboratory. Then I entered the Royal College of Chemistry, under Dr. Hofmann, where I stayed six years. My first original research, on a complicated and difficult subject, was published when I was nineteen; and from that time to the present, my

scientific education has been one continuous lesson in exactness of observation.

The following parallel passages show that my reviewer and myself differ but little in our estimates of the qualities required for scientific investigation :—

(Quarterly Review, Oct., 1871.)

"Part at least of this predisposition" [towards Spiritualism] "depends on *the deficiency of early scientific training*. Such training ought to include—1. The acquirement of habits of correct *observation* of the phenomena daily taking place around us; 2. The cultivation of the power of *reasoning* upon these phenomena, so as to arrive at *general principles* by the *inductive* process; 3. The study of the method of testing the validity of such inductions by *experiment;* and 4. The *deductive* application of principles thus acquired to the *prediction* of phenomena which can be verified by observation."

(Quarterly Journal of Science, July, 1870.)

"It will be of service if I here illustrate the modes of thought current among those who investigate science, and say what kind of experimental proof science has a right to demand before admitting a new department of knowledge into her ranks. We must not mix up the exact and the inexact. The supremacy of accuracy must be absolute." . . . "The first requisite is to be sure of *facts;* then to ascertain *conditions;* next, *laws*. Accuracy and knowledge of detail stand foremost amongst the great aims of modern scientific men. No observations are of much use to the student of science unless they are truthful and made under test conditions." . . . "In investigations which so completely baffle the ordinary observer, the thorough scientific man has a great advantage. He has followed science from the beginning through a long line of learning; and he knows, therefore, in what direction it is leading; he knows that there are dangers on one side, uncertainties on another, and almost absolute certainty on a third; he sees to a certain extent in advance. But, where every step is towards the marvellous and unexpected, precautions and tests should be multiplied rather than diminished." . . . "Investigators must work; although their work may be very small in quantity if only compensation be made by its intrinsic excellence."

The review is so full of perverse, prejudiced, or unwarranted mis-statements, that it is impossible to take note of them all. Passing over a number I had marked for animadversion, I must restrain myself to exemplifying a few of them.

The reviewer says that in my paper of July, 1870, my conclusion was "based on evidence which I admitted to be scientifically incomplete." Now in that paper I gave no experimental evidence whatever. After testifying emphatically as to the genuineness of two of the phenomena,

I gave an outline of certain tests which in my opinion ought to be applied, and, in a foot note, I said that my preliminary tests in this direction had been satisfactory. Is this admitting that I had not employed such tests? Is it fair to say that my results were "based on evidence which I admitted to be scientifically incomplete"?

On p. 346, referring to the results obtained with the board and balance, my reviewer urges that it never seems to have occurred to me "to test whether the same results could not be produced by throwing the board into rhythmical vibration by an *intentional* exertion of muscular action!" Yet will it be believed that at p. 344 he gives in my own words an account of my trying this identical experiment; and if he had taken the trouble to refer to my other paper on p. 486 of the *Quarterly Journal of Science*, he would have seen that I had tested in like manner the special apparatus to which he alludes. Has the reviewer learnt to blow both hot and cold? has his memory faded? or has chagrin at missing the truth in his long investigations spoilt his temper?

The "fact" spoken of on p. 347, that myself and friends attributed to psychic force the rippling of the surface of water in a basin, when it was really produced by the tremor of a passing railway train, is, like many other of the reviewer's "facts," utterly baseless; but as he is careful to tell us that in this particular case the "fact" is *not* one of his own invention, what is to be said of his discretion in believing his "highly intelligent witness"? No such occurrence took place; nor will a passing railway train produce a ripple on the surface of water in the basin in my room. I invite the "highly intelligent witness" to verify the fact.

On p. 348, in speaking of Mr. Varley, the reviewer says that his "scientific attainments are so cheaply estimated by those who are best qualified to judge of them, that he has never been admitted to the Royal Society." It seems natural it should follow that Mr. Varley *is* a Fellow of the Royal Society; he was elected in June last. I seem to be safe in saying exactly the opposite of the reviewer.

Not to weary the reader, I will deal only with three more mis-statements, selecting instances where the reviewer conceives that he is perfectly sure of his facts. In these three instances the reviewer commences his attack upon me with the ominous words "we speak advisedly." If this expression has any meaning, it implies that the writer is more than ordinarily certain of the statement it prefaces—that

he speaks with deliberate and careful consideration. Now I also speak "advisedly" when I affirm, with the proof in my hand, that two if not all of these three charges fulminated against me are either heedless or wilful misrepresentations.

The first charge is as follows :—

> "Now we speak advisedly when we say that Mr. Crookes knew nothing whatever of the perseverance with which scientific men with whom he has never had the privilege of associating, qualified by long previous experience in inquiries of the like kind, had investigated these phenomena."

This spiteful statement is utterly false. I should think there are few persons in this country who have examined more carefully into the literature of the subject, or have read a greater number of books on Spiritualism, demonology, witchcraft, animal magnetism, spiritual theology, magic, and medical psychology, in English, French, and Latin. In this list I have even included Dr. Carpenter's article on Electro-Biology and Mesmerism in the *Quarterly Review* for October, 1853.

The second well-considered charge runs as follows :—

> "We also speak advisedly when we say that Mr. Crookes was entirely ignorant of the previous history of the subject, and had not even acquainted himself with the mode in which Professor Faraday had demonstrated the real nature of table-turning."

As to my entire ignorance of the previous history of the subject, that I think is pretty well disposed of in the preceding paragraph.

In 1853 I was intimately acquainted with the late Robert Murray, at that time manager at Mr. Newman's, Philosophical Iustrument Maker, Regent Street. I was in his shop several times a-week, and in May and June of that year, Murray and I had many conversations on the subject of table-turning. I well remember his telling me one day that Professor Faraday had given him the design of a test-apparatus by which he expected to prove that the rotation of the table was due to unconscious muscular action. A day or two after, he showed me the instrument which he was just about to send to Professor Faraday. At that time I was not unfrequently favoured by the late Rev. J. Barlow, Sec. R.I., with invitations to his house in Berkeley Street, and on one of these occasions on entering the room he thus accosted me:—"Mr. Crookes, I am glad you have come, we are doing a little table-turning, and have just been trying Faraday's new instrument. He is here, let me introduce you to him." Professor Faraday, in his kindly genial

manner, explained to me fully the action of his instrument, and instead of pooh-poohing the remarks of a mere boy—for I was only 21—listened to my objection that his instrument was based upon the assumption that the supposed acting force from the hands would pass through the glass rollers, and replied that he had thought of that, and had got over the difficulty by tying the two boards together so as to render them rigid, when it was found that the table rotated as well with the instrument as without it. Since then I have frequently employed this device of a long delicate indicator to magnify minute movements. Perhaps my reviewer is not aware that this device is one of the commonest in physical laboratories, and was in frequent use long before any of the present generation saw the light. I have adopted it from 1853 up to the present time. In my early experiments I availed myself of Professor Faraday's test-instrument, but recently when I have frequently made it a *sine qua non* that the operator shall not touch the table or any portion of the instrument, as in Experiments III., IV., VI., * it would puzzle even the ingenuity of my reviewer to say how Faraday's instrument is to be applied. In such cases I adopt the well-known and superlatively delicate index, a ray of light.

The *Quarterly* goes on to magnify Faraday's experiment on table-turning, utterly forgetting that Faraday did not come to a similar conclusion with the reviewer; at least, it was much more obscurely put if put at all. Faraday, so far as I know, never spoke of a latent power within us, of which we are unconscious, working in our muscles, and leading them to acts which culminate in a form of speech or writing by movements of a table. Faraday would have held this a sufficiently great novelty if put before him as I endeavour to put it before myself after reading the *Quarterly's* article. My belief, however, is that Faraday experimented with questionable phenomena only.

The third charge in which the reviewer speaks "advisedly" runs thus:—

> "For this discovery [Thallium] he was rewarded by the Fellowship of the Royal Society; but we speak advisedly when we say that this distinction was conferred on him with considerable hesitation."

In January, 1863, whilst the interest attaching to the discovery of the element Thallium was fresh in the minds of scientific men, I was both surprised and gratified at receiving the following note from Professor Williamson:—

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* *Quarterly Journal of Science*, Oct., 1871, p. 487 *et seq.*

"University of London,
Burlington House, W.,
16th Jan., 1863.

"My dear Sir,—I should be glad to see your name on the list of Fellows of the Royal Society, and if you have no objection to my doing so, would do myself the honour of proposing you for election into the Society. Could you spare a quarter of an hour on Monday afternoon to talk the matter over with me at University College, and oblige

"Yours very truly,

"ALEX. W. WILLIAMSON."

This kindness being entirely unsought was the more pleasing to me. At the interview, my certificate was partially filled up and left in Professor Williamson's hands for the purpose of obtaining the necessary signatures. After this meeting with Professor Williamson I took no further steps in the matter, and spoke to no one on the subject; but in due time Professor Williamson wrote that my certificate was duly received at the Royal Society and read at the meeting, adding—

"There is on the part of the Chemists now on the Council a sincere appreciation of your high claims."

Subsequently, the same kind friend wrote—

"I have much pleasure in congratulating you and ourselves on your being one of the fifteen selected by the Council of the Royal Society for election."

I was formally elected on the 4th of June, 1863.

That discussion ensued when my name was brought before the Council follows as a matter of course. When fifteen only are to be elected from about fifty candidates, it is to be expected that the claims of each should be rigidly scrutinised; but whatever my anonymous reviewer may say "advisedly" on the subject, the *fact* remains that I was elected on the first application, an almost unheard-of honour for so young a man. Considering the large majority of eminent candidates whose election is postponed from year to year (sometimes even to ten years), there is no reason why my election should not have been postponed for at least one year, had there been truth in the statement that "considerable hesitation" was evinced in conferring this distinction upon me.

The grossness of the imputation, that the Royal Society admitted me although my investigations had only a merit purely *technical*, is astounding when the merits of the members generally are considered. I should consider them nearly all as purely technical workers in science, when they have done any work at all; but the curiosity is great when we find that the inquiry in question is purely technical.

Professedly, it is a question of apparatus. In entering upon an enquiry which I have endeavoured to keep within the limits of broad, tangible, and easily demonstrable facts, what qualities would common sense ask for in an investigator? Would an investigation be considered trustworthy were it conducted by a chemical dreamer who could spin off theory by the hour, and cover acres of paper with chemical symbols, but who in a laboratory would be unable to perform the simplest analysis, or build up a piece of chemical apparatus? Let it not, however, be supposed that I am unmindful of the philosophical and fructifying labours of Hofmann, Williamson, and others, in the field of Chemical Philosophy. But with reference to this enquiry, surely it should be conducted by one "who is trustworthy in an enquiry requiring technical knowledge for its successful conduct."

The reviewer assumes that the phenomenon of the suspension of heavy bodies in the air, the up and down movements of a wooden board, and the registration of the varying tension on a spring balance, are *psychical* not *physical;* and he lays down a dictum that in such matter-of-fact results which I have obtained, one's own eyes must not be trusted, for in such a case "seeing is anything but believing." To show my unfitness for ascertaining the weight of a piece of wood, he accuses me of being ignorant of the knowledge of Chemical Philosophy! He does, however, from his Olympian height, condescendingly admit that my ability is *technical,* that I have made creditable use of my very limited opportunities, and intimates that I am trustworthy as to any enquiry which requires technical knowledge for its successful conduct. Now what does he mean by all this? I always thought that these qualities which are so contemptuously accorded me were just those of the highest value in this country. What has chiefly placed England in the industrial position she now holds but technical science and special researches?

But my greatest crime seems to be that I am a "specialist of specialists!" I a specialist of specialists! This is indeed news to me, that I have confined my attention only to one special subject. Will my reviewer kindly say what that subject is? Is it general chemistry, whose chronicler I have been since the commencement of the "Chemical News" in 1859? Is it Thallium, about which the public have probably heard as much as they care for? Is it Chemical Analysis, in which my recently published "Select Methods" is the result of

twelve years' work? Is it Disinfection and the Prevention and Cure of Cattle Plague, my published report on which may be said to have popularised Carbolic Acid? Is it Photography, on the theory and practice of which my papers have been very numerous? Is it the Metallurgy of Gold and Silver, in which my discovery of the value of Sodium in the amalgamation process is now largely used in Australia, California, and South America? Is it in Physical Optics, in which department I have space only to refer to papers on some Phenomena of Polarised Light, published before I was twenty-one; to my detailed description of the Spectroscope and labours with this instrument, when it was almost unknown in England; to my papers on the Solar and Terrestrial Spectra; to my examination of the Optical Phenomena of Opals, and construction of the Spectrum Microscope; to my papers on the Measurement of the Luminous Intensity of Light; and my description of my Polarisation Photometer? Or is my speciality Astronomy and Meteorology, inasmuch as I was for twelve months at the Radcliffe Observatory, Oxford, where, in addition to my principal employment of arranging the meteorological department, I divided my leisure time between Homer and mathematics at Magdalen Hall, planet-hunting and transit taking with Mr. Pogson, now Principal of the Madras Observatory, and celestial photography with the magnificent heliometer attached to the Observatory? My photographs of the Moon, taken in 1855, at Mr. Hartnup's Observatory, Liverpool, were for years the best extant, and I was honoured by a money grant from the Royal Society to carry out further work in connection with them. These facts, together with my trip to Oran last year, as one of the Government Eclipse Expedition, and the invitation recently received to visit Ceylon for the same purpose, would almost seem to show that Astronomy was my speciality. In truth, few scientific men are less open to the charge of being "a specialist of specialists."

Whilst the scepticism of this reviewer in respect to the credibility of eminent witnesses, who give their names and detailed statements of definite facts, exceeds all reasonable bounds, his credulity in believing unattested statements of others, or in expecting his readers to give credit to all the absurd stories of his own experience, is refreshing in its simplicity. He gives five separate accounts of certain *séances*, where he saw something take place, but he condescends to few details; with one exception, no names or

tests are given, nor is there a single clue by which the accuracy of his statements can be verified. The only case in which a name and anything like detail is given is an account of a visit to Mr. Foster. Amongst other strange things here recorded, but by no means satisfactorily accounted for, even by our reviewer, is the following :—

> "We were not introduced to him by name, and we do not think that he could have had any opportunity of knowing our person. Nevertheless, he not only answered in a variety of modes the questions we put to him respecting the time and cause of the death of several of our departed friends and relatives whose names we had written down on slips of paper which had been folded up and crumpled into pellets before being placed in his hands ; but he brought out names and dates correctly in large red letters on his bare arm, the redness being produced by the turgescence of the minute vessels of the skin, and passing away after a few minutes like a blush."

The accurate answers to the reviewer's questions are supposed to be explained by "unconscious ideo-motor action," which, like "unconscious cerebration," is to explain all phenomena—past, present, and to come. Respecting the latter phenomenon he says—"The trick by which the red letters were produced was discovered by the enquiries of our medical friends." If the reviewer will not believe my plain statement of facts fortified by eminent witnesses, how does he expect his readers to believe these statements on the simple word of an anonymous writer? His "gullibility," to use his own coarse, but expressive word, is strongly shown in his implicit belief of an obviously exaggerated account given by the well-known Robert Houdin of the way in which he and his son performed some of their tricks.

It is curious to note how Dr. Carpenter is made to pervade the *Quarterly Review* article. The reviewer throughout the article unconsciously manifests his implicit conviction that Dr. Carpenter is to be regarded as the paramount authority in reference to the subtle psychological questions involved in the so-called spiritualistic phenomena. The theories of the profound psychologists of Germany, to say nothing of those of our own countrymen, are made quite subsidiary to the hypotheses of Dr. William Carpenter. An unquestioning and infatuated belief in what Dr. Carpenter says concerning our mental operations has led the reviewer wholly to ignore the facts that these speculations are not accepted by the best minds devoted to psychological inquiries. I mean no disrespect to Dr. Carpenter, who, in certain departments, has done some excellent scientific work, not always perhaps in a simple and undogmatic spirit, when I "speak advisedly" that his mind

lacks that acute, generalising, philosophic quality which would fit him to unravel the intricate problems which lie hid in the structure of the human brain.

Here I must bring this enforced vindication to a close. The self-reference to which I have been constrained is exceedingly distasteful to me. I forbear to characterise with fitting terms the spirit of this attack upon a scientific worker; it is enough that I have proved that in ten distinct instances the reviewer has deliberately calumniated me. It is a heavy and a true charge to bring against anyone occupying the reviewer's position amongst scientific men.

I cannot refrain from citing from the *Birmingham Morning News* the following trenchant criticism from the pen of an eminent chemist—himself a disbeliever in "Spiritualism." It will serve, as one instance amongst many, to show the feeling of disgust which the article in the *Quarterly Review* has excited among scientific men, whatever their opinions on this topic may be. After a few prefatory remarks, the writer goes on to say:—

"Either a new and most extraordinary natural force has been discovered, or some very eminent men specially trained in rigid physical investigation have been the victims of a most marvellous, unprecedented, and inexplicable physical delusion. I say unprecedented, because, although we have records of many popular delusions of similar kind and equal magnitude, and speculative delusions among the learned, I can cite no instance of skilful experimental experts being utterly, egregiously, and repeatedly deceived by the mechanical action of experimental test apparatus carefully constructed and used by themselves.

"As the interest in the subject is rapidly growing both wider and deeper, as a very warm discussion is pending, and further and still more extraordinary experimental revelations are in reserve, my readers will probably welcome a somewhat longer gossip on this than I usually devote to a single subject.

"Such an extension is the more demanded as the newspaper and magazine articles which have hitherto appeared, have, for the most part, by following the lead of the *Quarterly Review*, absurdly muddled the whole subject, and ridiculously mis-stated the position of Mr. Crookes and others. In the first place, all these writers that follow the *Quarterly* omit any mention or allusion to Mr. Crookes's preliminary paper published in July, 1870, but which has a most important bearing on the whole subject, as it expounds the object of all the subsequent researches

"Mr. Crookes there states, that 'Some weeks ago the fact that I was engaged in investigating Spiritualism, so-called, was announced in a contemporary *(The Athenæum)*, and, in consequence of the many communications I have since received, I think it desirable to say a little concerning the investigations which I have commenced. Views or opinions I cannot be said to possess on a subject which I do not profess to understand. I consider it the duty of scientific men, who have learned exact modes of working, to examine phenomena which attract the attention of the public in order to confirm their genuineness, or to explain, if possible, the delusions of the honest, and to expose the tricks of deceivers.' He then proceeds to state the case of Science *versus* Spiritualism, thus:—'The spiritualist tells of bodies weighing 50 or 100 lbs. being lifted up into the air without the intervention of any known force; but the scientific chemist is accustomed to use a balance which will render sensible a weight so small that it would take ten thousand of them to weigh one grain; he is, therefore, justified in asking that a power, professing to be guided by intelligence, which will toss a heavy body to the ceiling shall also cause his delicately-poised balance to move under test conditions.' 'The spiritualist tells of rooms and houses being shaken, even to injury, by superhuman power. The man of science merely asks for a pendulum to be sent vibrating when it is in a glass case, and supported on solid masonry.' 'The spiritualist tells of heavy articles of furniture moving from one room to another without human agency. But the man of science has made instruments which will divide an inch into a million parts, and he is justified in doubting the accuracy of the former observations, if the same force is powerless to move the index of his instrument one poor degree.' 'The spiritualist tells of flowers with the fresh dew on them, of fruit, and living objects being carried through closed windows, and even solid brick walls. The scientific investigator naturally asks that an additional weight (if it be only the 1000th part of a grain) be deposited on one pan of his balance when the case is locked. And the chemist asks for the 1000th part of a grain of arsenic to be carried through the sides of a glass tube in which pure water is hermetically sealed.'

"These and other requirements are stated by Mr. Crookes, together with further exposition of the principles of strict inductive investigation, as it should be applied to such an inquiry. A year after this he published an account of the experiments which I described in a former letter, and

added to his own testimony that of the eminent physicist and astronomer Dr. Huggins, and Serjeant Cox. Subsequently, that is, in the last number of the *Quarterly Journal of Science*, he has published the particulars of another series of experiments.

"I will not now enter upon the details of these, but merely state that the conclusions of Mr. Crookes are directly opposed to those of the spiritualists. He utterly, positively, distinctly, and repeatedly repudiates all belief in the operations of the supposed spirits, or of any other supernatural agency whatever, and attributes the phenomena he witnessed to an entirely different origin, viz., to the direct agency of the medium. He supposes that the force analogous to that which the nerves convey from their ganglionic centres to the muscles, in producing muscular contraction, may, by an effort of the will, be transmitted to external inanimate matter, in such a manner as to influence in some degree its gravitating power, and produce vibratory motion. He calls this the *psychic force*.

"Now, this is direct and unequivocal *anti*-Spiritualism. It is a theory set up in opposition to the supernatural hypotheses of the spiritualists, and Mr. Crookes's position in reference to Spiritualism is precisely analogous to that of Faraday in reference to table-turning. For precisely the same reasons as those above quoted, the great master of experimental investigation examined the phenomena called table-turning, and he concluded that they were due to muscular force, just as Mr. Crookes concludes that the more complex phenomena he has examined are due to psychic force.

"Speaking of the theories of the spiritualists, Mr. Crookes, in his first paper (July, 1870), says:—

"'The pseudo-scientific spiritualist professes to know everything. No calculations trouble his serenity; no hard experiments, no laborious readings; no weary attempts to make clear in words that which has rejoiced the heart and elevated the mind. He talks glibly of all sciences and arts, overwhelming the inquirer with terms like "electro-biologise," "psychologise," "animal magnetism," &c., a mere play upon words, showing ignorance rather than understanding.'

"And further on he says:—

"'I confess that the reasoning of some spiritualists would almost seem to justify Faraday's severe statement—that many dogs have the power of coming to more logical conclusions.'

"I have already referred to the muddled mis-statement of Mr. Crookes's position by the newspaper writers, who almost unanimously describe him and Dr. Huggins as two distinguished scientific men who have recently been con-

verted to Spiritualism. The above quotations, to which, if space permitted, I might add a dozen others from either the first, the second, or third of Mr. Crookes's papers, in which he as positively and decidedly controverts the dreams of the spiritualists, will show how egregiously these writers have been deceived. They have relied very naturally on the established respectability of the *Quarterly Review*, and have thus deluded both themselves and their readers. Considering the marvellous range of subjects these writers have to treat, and the acres of paper they daily cover, it is not surprising that they should have been thus misled in reference to a subject carrying them considerably out of their usual track; but the offence of the *Quarterly* is not so venial. It assumes, in fact, a very serious complexion when further investigated.

"The title of the article is 'Spiritualism and its Recent Converts,' and the 'recent converts' most specially and prominently named are Mr. Crookes and Dr. Huggins. Serjeant Cox is also named, but not as a *recent* convert; for the reviewer describes him as an old and hopelessly infatuated spiritualist.* Knowing nothing of Serjeant Cox, I am unable to say whether the reviewer's very strong personal statements respecting him are true or false—whether he really is 'one of the most gullible of the gullible,' &c., though I must express my detestation of the abominable bad taste which is displayed in the attack which is made upon this gentleman. The head and front of his offending consists in having certified to the accuracy of Mr. Crookes's account of certain experiments; and for having simply done this, the reviewer proceeds, in accordance with the lowest tactics of Old Bailey advocacy, to bully the witness, and to publish disparaging personal details of what he did twenty-five years ago.

"Dr. Huggins, who has had nothing further to do with the subject than simply to state that he witnessed what Mr.

* It is due to Mr. Serjeant Cox to state that, so far from being an old spiritualist, he had seen nothing of Spiritualism until he joined the Investigation Committee of the Dialectical Society, confident that he should thus assist in dissipating a delusion or detecting an imposture; but by that elaborate examination he was satisfied (as he states in his Report) that many of the asserted phenomena are genuine, but that there was no evidence whatever to support the theory of Spiritualism; that he was convinced by what he had seen that the Force was a purely psychical one, and in no way produced by spirits of the dead. He is, in fact, a decided opponent of the theory of the spiritualists, and has just published a book detailing his experiments, entitled "spiritualism Answered by Science." The writer of the article in the *Quarterly* must have been quite aware of this fact, for he actually cites a passage from the letter to me in which letter Mr. Serjeant Cox expressly repudiates the theory of Spiritualism.—W. C.

Crookes described, and who has not ventured upon one word of explanation of the phenomena, is treated with similar insolence.

"The reviewer goes out of his way to inform the public that Dr. Huggins is, after all, only a brewer, by artfully stating that 'like Mr. Whitbread, Mr. Lassell, and other brewers we could name, Dr. Huggins attached himself, in the first place, to the study of Astronomy.' He then proceeds to sneer at 'such scientific amateurs,' by informing the public that they 'labour, as a rule, under a grave disadvantage, in the want of that broad basis of scientific culture which alone can keep them from the narrowing and pervertive influence of a limited *specialism*.' The reviewer proceeds to say that he has 'no reason to believe that Dr. Huggins constitutes an exception' to this rule, and further asserts that he is justified in concluding that Dr. Huggins is ignorant of 'every other department of science than *the small subdivision of a branch* to which he has so meritoriously devoted himself.' Mark the words 'small subdivision of a branch.' Merely a twig of the tree of science is, according to this most unveracious writer, all that Dr. Huggins has ever studied.

"If a personal vindication were the business of this letter, I could easily show that these statements respecting the present avocations, the scientific training, and actual attainments of Dr. Huggins are most gross and atrocious misrepresentations; but Dr. Huggins has no need of my championship,—his high scientific position and the breadth and depth of his general attainments are sufficiently known to all in the scientific world, with the exception of the *Quarterly* reviewer. My object is not to discuss the personal question whether book-making and dredging afford better or worse training for experimental inquiry than the marvellously exact and exquisitely delicate manipulations of the modern observatory and laboratory, but to protest against this attempt to stop the progress of investigation, to damage the true interests of science and the cause of truth, by thus throwing low libellous mud upon any and every body who steps at all aside from the beaten paths of ordinary investigation. The true business of science is the discovery of truth, to seek it wherever it may be found, to follow the pursuit through bye-ways and high-ways, and, having found it, to proclaim it plainly and fearlessly, without regard to authority, fashion, or prejudice. If, however, such influential magazines as the *Quarterly Review* are to be converted into the vehicles of artful and elaborate efforts to

undermine the scientific reputation of any man who thus does his scientific duty, the time for plain speaking and vigorous protest has arrived. My readers will be glad to learn that this is the general feeling of the leading scientific men of the metropolis; whatever they may think of the particular investigations of Mr. Crookes, they are unanimous in expressing their denunciations of this article in the *Quarterly*.

"The attack upon Mr. Crookes is still more malignant than that upon Dr. Huggins. Speaking of Mr. Crookes's Fellowship of the Royal Society, the reviewer says, 'We speak advisedly when we say that this distinction *was conferred on him with considerable hesitation;*' and further, that 'We are assured, on the highest authority, that he is regarded among chemists as a specialist of specialists, *being totally destitute of any knowledge of chemical philosophy, and utterly untrustworthy as to any inquiry which requires more than technical knowledge for its successful conduct.*' The italics in these quotations are my own, placed there to mark certain statements to which no milder term than that of falsehood is applicable.

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"If space permitted, I could go on quoting a long series of mis-statements of matters of fact from this singularly unveracious essay. The writer seems conscious of its general character, for, in the midst of one of his narratives, he breaks out into a foot-note, stating that '*This* is not an invention of our own, but a fact communicated to us by a highly intelligent witness, who was admitted to one of Mr. Crookes's *séances*.' I have taken the liberty to emphasise the proper word in this very explanatory note.

"The full measure of the injustice of prominently thrusting forward Dr. Huggins and Mr. Crookes as 'recent converts' to Spiritualism will be seen by comparing the reviewer's own definition of Spiritualism with Mr. Crookes's remarks above quoted. The reviewer says that 'The fundamental tenet of the spiritualist is the old doctrine of communication between the spirits of the departed and the souls of the living.' This is the definition of the reviewer, and his logical conclusion is that Mr. Crookes is a spiritualist because he explicitly denies the fundamental tenet of Spiritualism, and Dr. Huggins is a spiritualist because he says nothing whatever about it.

"If examining the phenomena upon which the spiritualist builds his 'fundamental tenet,' and explaining them in some other manner, constitutes conversion to Spiritualism,

then the reviewer is a far more thorough-going convert than Mr. Crookes, who only attempts to explain the mild phenomena of his own experiments."

For six months past false and injurious reports concerning me and my recent investigations have been assiduously circulated in scientific circles. Although aware of their existence and their origin, I forbore to take public notice of them, thinking that their inherent falsehood would weight them too heavily to allow them to float long. The appearance of the *Quarterly* reviewer's attack on me, however, appears to have encouraged my culumniator, and, emboldened by my prolonged silence, a letter was sent to the *Echo* newspaper signed "B.,"* in which the writer put in a definite shape some of these ugly rumours, giving as his authority a certain "Mr. J." Not caring to carry on a paper war with an anonymous slanderer, I demanded that the mask should be dropped, when Mr. John Spiller, F.C.S., came briskly to the front, and in the *Echo* of November 6th accepted the responsibility of "B.'s" calumnies, adducing in corroboration of them a long letter he sent to me six months before—a letter having no relation whatever to the falsehoods related by "B."

A reply to definite accusations, made by a man possessing a certain reputation in the chemical world, is imperatively necessary, and regard for my own reputation makes me decide that my vindication shall be neither halting in language nor doubtful in meaning. And first let me show how little Mr. Spiller knows of the subject on which he speaks so positively. He came to my house unexpectedly one evening in April last, when Mr. Home and some friends had been dining with me. On that occasion nothing worth recording took place: in fact, it was not until some weeks later that my accordion was purchased, and my experimental apparatus devised. Mr. Spiller, however, appeared so struck with the little he did see that he begged me to invite him on similar occasions as often as I could. Mr. Serjeant Cox having given me a general permission to bring to his house any gentleman who took an interest in the subject, in accordance with this permission I invited Mr. Spiller to accompany me on April 25th to a strictly private party, when Mr. Home was expected. Had I thought him capable of committing so gross a breach of the laws of hospitality and good breeding as to publish a

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* Echo, Oct. 31, 1871.

garbled and untruthful account of what took place in the privacy of a gentleman's dining-room, I should certainly have considered him not included in that general permission. However, we assembled, and before sitting down it was agreed by the gentlemen present that any objection on the score of suspected trick should be taken at the time, so that it might be subjected to instant proof or disproof. To this condition Mr. Spiller fully agreed.

The meeting at Mr. Serjeant Cox's was not one of my series of "test *séances*," as Mr. Spiller tries to make out, but was purely private, and quite unconnected with the experiments described in the *Quarterly Journal of Science*. It was a preliminary trial, to enable me to judge what class of phenomena could be easiest verified, and what sort of test apparatus I should devise. Mr. Spiller was never present at any test experiments, and saw Mr. Home only on the two occasions I have mentioned.

During the meeting at Mr. Serjeant Cox's many striking phenomena took place, and Mr. Spiller, being a stranger, was specially invited by Mr. Home to examine everything to his heart's content, and move about or get under the table whenever he liked. In accordance with my usual habit of taking notes, I was writing the whole time when I was not scrutinising the occurrences, and it was, therefore, easy not only to take down a description of the phenomena as they occurred, but also to record the actual words or comments used by each person present. From time to time I repeated aloud what I had written, and asked the company if it were correct; when any correction was supplied it was invariably adopted. The narrative of the proceedings was written in full immediately after, and a copy was sent to Mr. Spiller, as well as to others who had been present, for them to approve or alter. Mr. Spiller has dignified this paper by the name of an affidavit, whereas it was purely a private memorandum, never intended to be made public, and only drawn up so that each person might possess a thoroughly truthful account of what was considered at the time to be a very remarkable series of occurrences.

I have before me the paper which Mr. Spiller returned, corrected in pencil, and each correction signed with his initials. Where he has not corrected it is clear that he tacitly assents. His objections are of an utterly insignificant kind, and, comparing what he accepts with what he rejects, it will be seen that he strains at gnats while he swallows camels.

It now appears that Mr. Spiller totally disregarded the agreement assented to by all present—to speak out at the time, and thus to invite and facilitate the most searching inquiry. He arrogates to himself the position of an infallible judge instead of an honest inquirer. Whilst he professed to act openly and above-board, he was really carrying on furtive observations of his own. He recklessly discredits the other witnesses who were present, and expects the world to believe his own unsupported assertion. Brought forward at the time, his observations might have been of service, whilst at this distant date they are valueless. Mr. Spiller seems to imagine that, whilst everything else in nature is to be tested by careful experiment, his own hasty conclusions are to be accepted unchallenged.

The first accusation launched at me by Mr. Spiller is of a suppression of the truth. I am said to have recorded certain phenomena in the *Quarterly Journal of Science*, and to have ascribed their production to the action of a hitherto unknown form of force, notwithstanding that Mr. Spiller had explained to me six months previously the "tricks" by which these things were done.*

From the various forms under which this accusation has been repeated it appears that Mr. Spiller is trying to establish, either that he was present at the test experiments on which my papers in the *Quarterly Journal of Science* were based, or that these papers were but a narrative of what took place in his presence at Mr. Serjeant Cox's. Now I have published no narrative whatever, of any experiments at which Mr. Spiller was present, neither have I referred to them in any of my papers. His assertion, therefore, under whichever form it is viewed, is false.

In the *Echo* of November 10th I have gone fully into the analysis of these several accusations, and by placing in parallel columns extracts from Mr. Spiller's printed letters and statements, plainly convicted him in each case of a direct mis-statement of fact.

To show how ignorant I was of his reputed explanations of the few trifling things he thought he found out at Mr. Serjeant Cox's, and how unsuccessfully I begged him to give the information he now says I was aware of, I need only quote from a letter I wrote him on May 24th last. It runs as follows:—

"You have now for the third time given a very mysterious hint that you are in possession of a fact which would make me entirely alter my opinion about Mr. Home. Now I put it to you whether it would not be more consistent with

* Echo, Nov. 6, 1871.

our friendship for you to tell me fairly and candidly what you do know rather than keep me in suspense, week after week. You say it is impossible for you to write about it. That is a word I do not understand. If you will give me a plain statement of facts, and will not insinuate dishonest conduct on the part of myself and family, I promise you that I shall not only be very grateful to you, but will give what you tell me the most serious attention."

Mr. Spiller never came, and to my earnest appeal to put me in possession of his concealed facts I received no answer. And yet he has the audacity to say that I was perfectly aware of his explanation of the phenomena he witnessed!

But it is further reported that Mr. Spiller was my assistant during my test experiments, and found out at my house how the accordion "trick" was done.* Mr. Spiller was not my assistant, nor was he present at my house on any occasion when an accordion or any sort of apparatus was used. I refer to what he said about the only occasion when he ever saw an accordion in the same room with Mr. Home. I quote from a letter he wrote to me on May 3rd:† —"The accordion business [at Mr. Serjeant Cox's] was rather curious, but then I was *not* under the table at the time of 'The Last Rose of Summer' being played." After experience of Mr. Spiller's logical method I am not surprised at the inference that this is the same thing as being under the table and finding out how the trick was done.

It would occupy too much space to re-state the accordion problem, but I will refer all who are interested to my description in the *Quarterly Journal of Science* for July last. If Mr. Spiller has really found out how this "trick" is done, why does he not publish it? for he would then have solved one of the most puzzling problems ever presented to his notice—a problem still unsolved by far wiser heads than his.

Debarred by the editor of the *Echo* from making further use of the columns of that journal, Mr. Spiller retreats to the pages of the *English Mechanic*,‡ where he reiterates accusations the falsity of which I have before exposed by means of his own letters. He complains that his previous perverse mis-statements and personal misrepresentations have brought him under sharp criticism. Of course they have; but this criticism is simply a consequence of his own unwarrantable attack. I cannot argue with my detractor about psychic force, or the explanation of the phenomena

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* English Mechanic, Nov. 3, 1871.

† Published by Mr. Spiller in the Echo for Nov. 6, 1871.

‡ English Mechanic, Dec., 1, 1871.

recorded at my test *séances*, for the sufficing reason that he was never present at any of these experiments, and he has had no opportunity of knowing anything of the subject, except from my published papers. Professing to criticise my investigations, he carefully avoids all reference to any of these papers, and keeps harping on a weak remark of his own about the size of what he calls a "monster" locket attached to Mr. Home's watch-chain. A stranger to the circumstances would imagine that something very important turned upon the exact dimensions and reflecting power of this trinket. But what are the facts? In his letter to me of May 3rd,* speaking of an accordion which he saw playing at Mr. Serjeant Cox's in Mr. Home's hand, Mr. Spiller says that he "saw a flash of light whilst under the dining-room table"—a reflection from the "*shining surface*" of this locket; and on October 31st† his friend "B" gives (and he endorses) an entirely different tale about this light, which we are now told for the first time "was playing about Mr. Home's fingers as they lay in his lap,"—produced by the reflection from the "*polished reverse side*" of the locket in question. Speaking for myself, I saw nothing of this alleged light, nor did Mr. Home draw attention to it. My part in the transaction was simple. Mr. Spiller was the critical observer under the table on this occasion, and all I did was to write down what he said. In my notes written at the time, and acquiesced in by nine witnesses, I read—"Mr. Spiller declared that the accordion appeared self-luminous while it was playing." He subsequently denied this. He is welcome to do so, for it is a matter of no consequence whether he saw a light at all; the real question is, Did the accordion play and how was it played? Whether Mr. Spiller observed any light at all, the source of the light he said he saw, or the size of one of Mr. Home's trinkets, has nothing whatever to do with the subject of my investigations. The locket might be as big as a dinner-plate, and might be polished to the lustre of a speculum; the light it reflected might be as bright as the noon-day sun, and all that it would prove would be my calumniator's incompetency as an observer for not discovering it, or his inaccuracy as a witness for not mentioning it at the time when instant verification or disproof was possible.

Mr. Spiller speaks on one occasion of the "*shining surface*" of this locket; on another of its "*polished reverse*

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* Echo, Nov. 6, 1871. † Echo, Oct. 31, 1871.

side;" whilst on a third occasion he draws attention to the fact that platinum is "a white metal sometimes used for reflectors." Now to these inconsequential assertions I will oppose facts. The locket in question is now before me. Its obverse and reverse are almost identical, and the whole is so covered with ornamental engraving that there is not a particle of polished platinum about it. Moreover, on each side there are fifteen raised metallic ornaments of different shapes, which still further diminish the amount of light reflected from the surface. I have, moreover, carefully examined the optical properties of this locket. Tested in an accurate photometer, the reflecting power of each side is found to be equal to that of a silvered glass speculum 1·8 millimetres (less than 1-10th of an inch) square! I advise Mr. Spiller to keep silent about this "monster" locket in future, or, like a second Frankenstein, he will find he has conjured up a monster from his own inward consciousness which will devour his reputation.

But, of all the unfounded statements which my disingenuous assailant has circulated, the most outrageous is that he has been threatened with legal proceedings* because he refused to sign the narrative I sent him of the proceedings at his *séance* at Mr. Serjeant Cox's. Now, although the intrinsic absurdity of such a threat, made under the very eyes of a serjeant learned in the law, must be patent to everyone, it is necessary for me to state, which I do in the most emphatic manner, that this disgraceful accusation is *totally untrue.* I have never threatened Mr. Spiller with legal proceedings; I have never given him the remotest hint of such a thing; never did such a thought enter my mind; and nothing that he has ever said or written in connection with this controversy could induce me for a moment to entertain the idea of legal proceedings.†

I hope I have now finished with the, to me, uncongenial task of combating perverse mis-statements and refuting personal misrepresentations; and that I may be able to devote myself once more to quiet research.

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* English Mechanic, Dec. 1, 1871.

† Since this was written Mr. Spiller has been made to withdraw his accusation (English Mechanic, Dec. 22, 1871). The ungracious manner in which he eats his offensive words "*I was threatened with legal proceedings*" shows that his anxiety to say something spiteful has led him to say the thing that was not.

CORRESPONDENCE

Upon DR. CARPENTER'S *asserted Refutation of* MR. W. CROOKES'S *Experimental Proof of the existence of a hitherto undetected Force.*

DR. W. B. CARPENTER, F.R.S., introduced into a Public Lecture an experiment which he alleged to be that upon which I had relied for proof of the existence of a hitherto undetected force. It was not my experiment, but an unjustifiable misrepresentation of it. Called upon to apologise for the wrong he had thus publicly done to me, Dr. Carpenter threw the responsibility from himself upon others whom he stated to have been his informants. I print the Correspondence, and leave it to the judgment of the scientific world.

WILLIAM CROOKES.

20, MORNINGTON ROAD, N.W.
February 21st, 1872.

PROFESSOR G. G. STOKES, SEC. R.S.

DEAR SIR,

My attention has been called to some statements publicly made by Dr. W. B. Carpenter, F.R.S., who gives you as the authority for some serious misrepresentations respecting myself.

On Friday, 19th January, 1872, Dr. Carpenter in a Lecture at the Vestry Hall, Chelsea, said:—

> "There was one fact of this kind in connection with Psychic Force which he would grapple with. Mr. William Crookes had sent a paper to the Royal Society last summer containing investigations into what he called a new force. It was returned to him by the Secretary, with a letter telling him that the Society would not refuse to receive papers upon the subject, but that some kind of scientific evidence ought to be given. Mr. Crookes afterwards sent in a second series of experiments. The Secretary did not like to refuse this paper on his own responsibility, so it came before the Council of the Royal Society; it was a most unusual thing for the Council to refuse a paper sent in by a member. Mr. Crookes's second paper came before the Council a month ago, and a Committee of two was appointed to examine it. They gave in their Report to the Council yesterday, and it was unanimously resolved that the paper be returned to him, as in the opinion of the Royal Society it was good for nothing. Anybody who had a pair of scales in the house could make an experiment to prove the fallacy of one of the points in Mr. Crookes's paper."

Dr. Carpenter here exhibited an experiment intended to show (and which some of his audience must have believed really did show) that I was

ignorant of the merest rudiments of mechanics, and was deluded by an experiment the fallacy of which an intelligent schoolboy could have pointed out. He exhibited a glass of water poised against an equal weight upon a balance, and showed that by dipping a finger in water—that is, by *pressing* with a force exactly equal to the weight of the water displaced by the immersed finger—he increased the weight on that side of the balance. Now, unless the audience were intended to believe that I was ignorant of this childishly simple fact, and, further, that it completely accounted for the result of my experiment, for what purpose was this experiment shown?

A gentleman present who had read an account of my researches subsequently wrote to Dr. Carpenter, protesting against this mis leading experiment being put forward as fairly representing what I had tried. In his reply to this protest, Dr. Carpenter says:—

> "So far from having been labouring to prejudice Mr. Crookes at the Royal Society, I did not even know of his having sent in a second paper until after it had been rejected by the Council. This rejection took place on Thursday afternoon, and I heard of it and the grounds of it from Professor Stokes and Sir Charles Wheatstone at the evening meeting. What I stated as to Mr. Crookes's experiment with the balance was *on their authority*,* as I shall be prepared to prove if the correctness of that statement is impugned."

Now, as a member of that Committee which decided on the rejection of my papers, you, of course, are aware that Dr. Carpenter's balance experiment wholly misrepresents my experiment. My illustrations showed you that the vessel of water was placed over the centre of the fulcrum. You had likewise read what I wrote in my last paper, that "immersing the hand to the utmost in the water, does not raise the level of the water sufficient to produce any movement whatever of the index of the balance."

From the construction of the instrument, as shown by the several drawings and photographs, and fully described in words, you would also have seen that not only was it impossible for any such effect to have taken place, but that the single experiment in which I employed water contact was one I had specially devised for the purpose of getting over some untenable objections raised by yourself against one of my early experiments.

My papers, as well as the illustrations accompanying them, therefore distinctly prove that I could not have made the blunder which Dr. Carpenter told a public audience I had committed; and as Dr. Carpenter being pressed on the subject now endeavours to shift the burden of misrepresentation on to your shoulders, I shall feel obliged by your informing me if you really did make the statement which he attributes to you.

I remain,

Truly yours,

(Signed) WILLIAM CROOKES.

A similar letter was sent to Sir Charles Wheatstone. In due time I received the following replies:—

ATHENÆUM CLUB, PALL MALL.
February 28th, 1872.

DEAR SIR,

The conversation between Sir Charles Wheatstone, Dr. Carpenter, and myself, to which you allude in your letter of the 21st inst., has wholly passed out of my memory. It attracted no particular attention on my part, as I had no conception that a mere casual conversation in the tea-room of the Royal Society was going to be reproduced, with greater or less accuracy, at a public

* The italics are Dr. Carpenter's.

meeting. I can only speak with confidence of what I could or could not have said from the clear recollection I have of what I then knew.

You may recollect that in writing to you on the subject of your first paper, I stated as my own opinion, that the mere fact that a paper professed to establish the existence of a hitherto unrecognised force was no reason why a scientific Society should refuse to accept it, but *was* a reason why the experiments should be subjected to the most rigorous scrutiny. This position you accepted as perfectly fair and reasonable. I also pointed out conceivable modes of explaining the results of some of the experiments you described, by referring them to the action of perfectly well known causes. I did not maintain that the results were *actually produced* in the particular way I suggested, but only that they might reasonably be *conceived to have been so produced*, so that a person professing to establish the existence of a new force was bound to make his demonstration free from such objections.

Among other things, I pointed out that the glass vessel of water which you employed in one of your experiments rested on the board at some distance from the fulcrum; and that, consequently, when the hand was dipped into the water contained in the copper basin which, resting on a firm independent support, dipped into the water contained in the glass vessel, with which its interior was in communication by a hole, if time were given for the water to run through, the pressure on the base of the glass vessel would be increased by the weight of the water displaced by the hand, and consequently the spring balance would be affected.

Whether in the letter you wrote me in reply this particular point was noticed I do not at the moment recollect, nor does it signify, for in your second and third papers, one or both, I noticed particularly that you modified your experiment by placing the glass vessel with its middle over the fulcrum, and tested by direct experiment whether the insertion of the hand in the water in the copper vessel had any sensible effect on the balance.

These modifications I noticed particularly, as they had been made, as I presumed, expressly to meet certain objections which I had raised. It is quite impossible, therefore, that in my conversation with Dr. Carpenter, after your papers were ordered to be returned to you, I could have represented them to him as open to this objection. I *may* have talked to him on this subject (I don't know that I *did*), when your first paper alone had appeared; and, if so, it is conceivable that he may have confounded two conversations held, one several months ago, the other quite recently.

I wish to make one remark before I conclude. The question brought before the Committee of Papers of the Royal Society with reference to your papers was simply whether they should be accepted or declined. The decision of the Committee, as entered on the Minutes, was simply "declined." What estimate of the value of your papers each individual voter may have formed—what considerations mainly may have influenced him in giving his vote—are questions which he alone can answer; so that no one, as I conceive, has a right to add to the formal decision his notion of the grounds of it.

I am, Dear Sir,

Yours sincerely,

G. G. STOKES.

William Crookes, Esq., F.R.S.

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19 Park Crescent, Portland Place, N.W.
March 14, 1872.

Dear Sir,

I did not state to Dr. Carpenter that the water experiment *disproved* the existence of your hypothetical psychic force; what I did say was to the effect that no argument in its favour could be deduced from the experiment which you put forward so prominently.

You say, page 20 of your first pamphlet, "I am now fitting up an apparatus in which contact is made through water in such way that transmission of

mechanical movement to the board is impossible;" and again, at page 28, "As the mechanical transmission of power is by this means entirely cut off between the copper vessel and the board, the power of muscular control is thereby completely eliminated." In both these sentences you explain why you employed the interposition of water, and you state nothing from which I can infer that you had any other reason for doing so. It is further evident that in the experiments first communicated to Professor Stokes, the vessel of water was not placed directly over the fulcrum of the lever; for you say (page 28), "In my first experiments with this apparatus, referred to in Professor Stokes's letter and my answer, the glass vessel was not over the fulcrum, but nearer B." That under such circumstances a mechanical pressure is exerted on the lever when the hand is dipped in the water is an undoubted fact; whether it produces the effect in question or not depends on the sensibility of the apparatus and the placing of the vessel. A displacement of 3 cubic inches of water would exert a pressure which, if directly applied to your machine, would be equal to 6816 grains; the extreme pressure of your imaginary psychic force being, according to your own statement, 5000 grains. The fluctuation of the pressure in your experiment would naturally follow from the varying quantity of water displaced owing to the unsteadiness of the hand in the liquid.

From the above it appears to me that your experiment with the water vessel does not offer an iota of proof in favour of your doctrine of psychic force, or any disproof of the effect not being mechanical; though it might easily lead persons unacquainted with hydrostatic laws to infer that no mechanical pressure could be communicated under such circumstances.

I cannot see what part you intended the water to play when you subsequently placed the vessel over the dead point, and it appears to me contrary to all analogy that a force acting according to physical laws should produce the motion of a lever by acting on its fulcrum.

Yours faithfully,

C. WHEATSTONE.

W. CROOKES, Esq.

P.S.—I enclose a note which I have received from Dr. Carpenter.

UNIVERSITY OF LONDON,
BURLINGTON GARDENS, W.
Feb. 28, 1872.

DEAR SIR CHARLES,

If you should be communicating with Mr. Crookes on the subject as to which you spoke to me, it may be as well that you should let him know what was *my* understanding of the matter, as derived from yourself and Professor Stokes, and what was the account I gave of it in my Lecture.

I understood from you that Mr. Crookes had adduced the descent of a balanced vessel of water, on the immersion of Mr. Home's fingers into it, as a proof of the exertion of some force which could not be mechanical, and which must therefore be a *new* force, call it psychic, spiritual, or what you please. And I showed my audience that the immersion of the fingers into a tumbler of water so balanced would produce its descent simply by hydrostatic pressure; from which I drew the inference that Mr. Crookes's experiment gave no proof whatever of the existence of any force not known to us.

If I have in any way misunderstood your account of Mr. C.'s experiment, and have thereby done him injustice in my representation of it, I shall be quite ready to make any correction that you (as a mutual friend) may consider to be called for.

Believe me,

Yours faithfully,

WILLIAM B. CARPENTER.

SIR CHAS. WHEATSTONE.

20 Mornington Road, N.W.

Dear Sir Charles, *March 27th*, 1872.

You must allow me to protest against the experiments given in my Royal Society paper of September 27th, 1871, being ignored and the discussion being made to turn on a less decisive experiment referred to in an earlier paper. The experiments of September 27, 1871, are those referred to by Dr. Carpenter, and reported on by Professor Stokes and by yourself. That there is no doubt of this being the case is evident from Dr. Carpenter's language at Chelsea and elsewhere:—

> "Mr. William Crookes had sent a paper to the Royal Society last summer [June 14th and June 28th, 1871] containing investigations into what he called a new force. It was returned to him by the Secretary. Mr. Crookes afterwards sent in a second series of experiments [September 27th, 1871]. The Secretary did not like to refuse this paper on his own responsibility, so it came before the Council of the Royal Society. . . . . Mr. Crookes's second paper came before the Council a month ago, and a Committee of two was appointed to examine it. They gave in their Report to the Council yesterday [January, 18th, 1872], and it was unanimously resolved that the paper be returned to him, as in the opinion of the Royal Society it was good for nothing.
>
> "This rejection took place on Thursday afternoon [January 18th, 1872], and I heard of it and the grounds of it from Professor Stokes and Sir Charles Wheatstone at the evening meeting. What I stated as to Mr. Crookes's experiment with the balance was *on their authority*."

Dr. Carpenter here explicitly refers to the experiments given in my paper of September 27th, 1871, and not only says that you mentioned to him the grounds of the rejection of that paper on the very day it occurred, but that you described to him one of the experiments given in it.

I must therefore object to having the discussion drawn from the point at issue, from the testing experiment in question presented to the Royal Society, to an imperfect form of the same experiment which was merely referred to in a paper published elsewhere.

From my pamphlet reprinted from the "Quarterly Journal of Science" for October 1st, 1871 (page 28), you quote the following words:—

> "As the mechanical transmission of power is by this means entirely cut off between the copper vessel and the board, the power of muscular control is thereby completely eliminated."

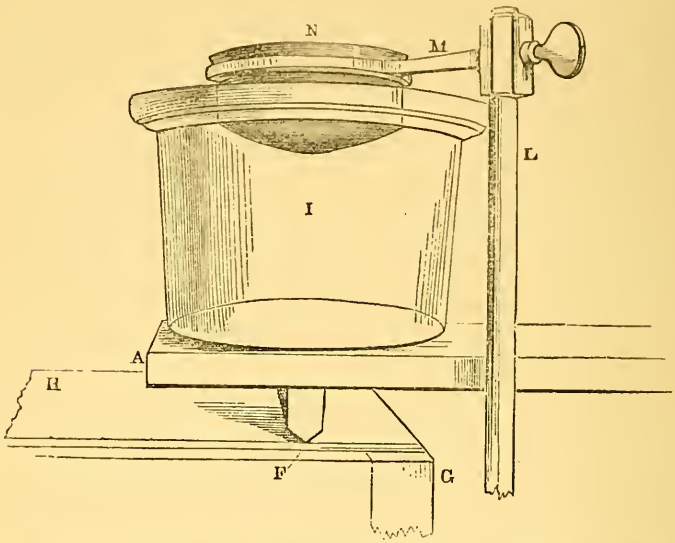
You also quote a foot-note in which I refer to an early and imperfect form of the experiment, and you thereupon comment on these passages, speak of well-known hydrostatic laws, and give calculations, as if my published experiments in question really afforded any grounds for severe remarks.

It is much to be regretted that you should have selected from my pamphlet two passages occurring on page 28, and should have omitted to read the few lines which connect these passages; otherwise it must have been apparent to you that your self-evident exposition of a well-known hydrostatic law had no bearing on the case in point.

Let me supply the deficiency. The following paragraph, from page 28 of my pamphlet, fills up the gap between the two passages you quote:—

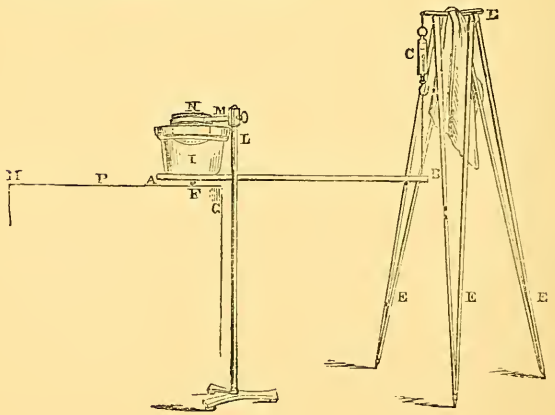
> "*On the board, exactly over the fulcrum*, is placed a large glass vessel filled with water, I. L is a massive iron stand furnished with an arm and a ring, M N, in which rests a hemispherical copper vessel, perforated with several holes in the bottom. The iron stand is 2 inches from the board, A B, and the arm and copper vessel, M N, are so adjusted that the latter dips into the water 1½ inches, being 5½ inches from the bottom of I, and 2 inches from its circumference. Shaking or striking the arm M or the vessel N produces no appreciable mechanical effect on the board A B capable of affecting the balance. *Dipping the hand to the fullest extent into the water in* N *does not*

produce the least appreciable action on the balance. As the mechanical transmission of power is by this means entirely cut off between the copper vessel and the board A B, the power of muscular control is thereby eliminated."



I venture to think that had you read the above connecting link between your two quotations from my pamphlet, or had even noticed the parts I have italicised, you would not have written,—

> "That under such circumstances a mechanical pressure is exerted on the lever when the hand is dipped in the water is an undoubted fact; whether it produces the effect in question or not depends on the sensibility of the apparatus and the placing of the vessel. A displacement of 3 cubic inches of water would exert a pressure which, if directly applied to your machine, would be equal to 6816 grains; the extreme pressure of your imaginary psychic force being, according to your own statement, 5000 grains."



I have preferred to quote from the reprint of my paper in the "Quarterly Journal of Science" for October 1st, 1871, as your citations appear to show that you have derived your information from it; but in my Royal Society communication of September 27th, 1871—the paper to which Dr. Carpenter and yourself referred—the same experiment is described in almost identical words, and is, moreover, illustrated with photographs of the apparatus.

But why refer only to the water-contact experiment? The true explanation is the one which will reconcile all the indisputable facts. How does the well-known hydrostatic law account for Experiment 2 on p. 29, in which the vessel of water was removed? Or Experiment 3, in which the force acted through a space of 1 foot? Or Experiment 4, in which the force acted at a distance of 3 feet? Or Experiments 5 and 6, in which another kind of apparatus was used, and the force likewise acted at a distance?

The only sentence in your letter bearing in any way on my actual experiment is the last one, in which you say:—

> "I cannot see what part you intended the water to play when you subsequently placed the vessel over the dead point, and it appears to me contrary to all analogy that a force acting according to physical laws should produce the motion of a lever by acting on its fulcrum."

In this I entirely agree. I too cannot see the part the water played; nor can I trace the analogy between the psychic force and a force acting according to known physical laws. Yet the facts recorded in my papers are true for all that.

I remain,

Truly yours,

WILLIAM CROOKES.

SIR CHARLES WHEATSTONE, F.R.S., &c.

TO THE PRESIDENT AND COUNCIL OF THE ROYAL SOCIETY.

20 MORNINGTON ROAD, N.W.,
March 30th, 1872.

GENTLEMEN,

I beg to bring to your notice the fact that on two recent occasions the secret proceedings of your Council have been made public, contrary to the honourable and salutary practice which has hitherto prevailed.

In an article in the "Quarterly Review" (No. 262, p. 343), understood to be written by Dr. W. B. Carpenter, F.R.S., the reviewer says:—

> "For this discovery he [*i.e.*, myself] was rewarded by the Fellowship of the Royal Society; but we speak advisedly when we say that this distinction was conferred on him with considerable hesitation, the ability he displayed in the investigation being purely technical."

No one, it is clear, has a right to reveal what takes place in the private deliberations of the Council. In the discussions about the eligibility of the various candidates for the Fellowship, there must necessarily be a comparison of claims, a full consideration of the merits of each individual; not only must a man's intellectual powers be canvassed, but his moral and social character must be discussed. If, however, these discussions are afterwards to be revealed and *published*, no man's character, after his name has been put in nomination for the Royal Society, will be safe from charges founded on hearsay and imperfect evidence.

Again, on Friday, January 19th, 1872, Dr. Carpenter, in a Lecture at the Vestry Hall, Chelsea, speaking of a paper which has recently come before you, stated that—

> "Mr. Crookes's second paper came before the Council [of the Royal Society] a month ago, and a committee of two was appointed to examine

it. They gave in their report yesterday [Jan. 18th, 1872], and it was unanimously resolved that the paper be returned to him, as, in the opinion of the Royal Society, it was good for nothing."

Dr. Carpenter is not a member of your Council; what he states must, therefore, if true, be the result of hearsay; and when the rejected paper was returned to me on January 18th, it was unaccompanied by any remarks tending to confirm the opinion attributed by Dr. Carpenter to the Royal Society.

I repeat, that if the private deliberations of the Council of the Royal Society are to be made public in this informal and irresponsible manner, the character and scientific *status* of every member of the Society will be at the mercy of any lecturer who may proclaim that he is in the secret of your deliberations.

That the worth of each paper treating of new and exciting topics should be the subject of minute and even personal discussion is from the nature of the case inevitable; but if portions of those discussions separated from the accompanying and modifying circumstances are to be published on no better authority than the perverted statement of one who pretends he has had reported to him the substance of the controversy, members of the Council will either withhold the free expression of their opinions, or their deliberations will go forth to the world distorted with the prejudices of invidious talkers.

Therefore, I respectfully beg the Council of the Royal Society will so deal with this matter as to deter, for the future, any Fellow from betraying and publishing deliberations which ought to be held inviolate.

I am, Gentlemen,

Your obedient Servant,

WILLIAM CROOKES.

THE ROYAL SOCIETY,

BURLINGTON HOUSE, LONDON, W.

18*th April*, 1872.

DEAR SIR,

Your letter of March 30th to the President and Council of the Royal Society, was laid before them at their meeting held to-day. They passed the following Resolutions:—

Resolved—(1.) That the President and Council regret that statements in question should have been published, both because they are incorrect in point of fact, and because the unauthorised publication of the deliberations of the Council is contrary to the usage of the Society.

(2.) That the above Resolution be communicated to Mr. Crookes.

I am, Dear Sir,

Yours faithfully,

G. G. STOKES, Sec. R.S

Wm. Crookes, Esq., F.R.S.

NOTES OF AN ENQUIRY INTO THE PHENOMENA CALLED SPIRITUAL,

DURING THE YEARS 1870-73.*

LIKE a traveller exploring some distant country, the wonders of which have hitherto been known only through reports and rumours of a vague or distorted character, so for four years have I been occupied in pushing an enquiry into a territory of natural knowledge which offers almost virgin soil to a scientific man. As the traveller sees in the natural phenomena he may witness the action of forces governed by natural laws, where others see only the capricious intervention of offended gods, so have I endeavoured to trace the operation of natural laws and forces, where others have seen only the agency of supernatural beings, owning no laws, and obeying no force but their own free will. As the traveller in his wanderings is entirely dependent on the goodwill and friendliness of the chiefs and the medicine men of the tribes amongst whom he sojourns, so have I not only been aided in my enquiry in a marked degree by some of those who possess the peculiar powers I have sought to examime, but have also formed firm and valued friendships amongst many of the recognised leaders of opinion, whose hospitalities I have shared. As the traveller sometimes sends home, when opportunity offers, a brief record of progress, which record, being necessarily isolated from all that has led up to it, is often received with disbelief or ridicule, so have I on two occasions selected and published what seemed to be a few striking and definite *facts;* but having omitted to describe the preliminary stages necessary to lead the public mind up to an appreciation of the phenomena and to show how they fitted into other observed facts, they were also met, not only with incredulity, but with no little abuse. And, lastly, as the traveller, when his exploration is finished and he returns to his old associates, collects together all his scattered notes, tabulates them, and puts them in order ready to be given to the world as a connected narrative, so have I, on reaching this stage of the enquiry, arranged and put together all my disconnected observations ready to place before the public in the form of a volume.

* First published in the *Quarterly Journal of Science* for January, 1874.

The phenomena I am prepared to attest are so extraordinary and so directly oppose the most firmly rooted articles of scientific belief—amongst others, the ubiquity and invariable action of the force of gravitation—that, even now, on recalling the details of what I witnessed, there is an antagonism in my mind between *reason*, which pronouces it to be scientifically impossible, and the consciousness that my senses, both of touch and sight,—and these corroborated, as they were, by the senses of all who were present,—are not lying witnesses when they testify against my preconceptions.*

But the supposition that there is a sort of mania or delusion which suddenly attacks a whole roomful of intelligent persons who are quite sane elsewhere, and that they all concur to the minutest particulars, in the details of the occurrences of which they suppose themselves to be witnesses, seems to my mind more incredible than even the facts they attest.

The subject is far more difficult and extensive than it appears. Four years ago I intended only to devote a leisure month or two to ascertain whether certain marvellous occurrences I had heard about would stand the test of close scrutiny. Having, however, soon arrived at the same conclusion as, I may say, every impartial enquirer, that there was "something in it," I could not, as a student of nature's laws, refuse to follow the enquiry wheresoever the facts might lead. Thus a few months have grown into a few years, and were my time at my own disposal it would probably extend still longer. But other matters of scientific and practical interest demand my present attention; and, inasmuch as I cannot afford the time requisite to follow the enquiry as it deserves, and as I am fully confident it will be studied by scientific men a few years hence, and as my

* The following remarks are so appropriate that I cannot forbear quoting them. They occur in a private letter from an old friend, to whom I had sent an account of some of these occurrences. The high position which he holds in the scientific world renders doubly valuable any opinion he expresses on the mental tendencies of scientific men. "Any *intellectual* reply to your facts I cannot see. Yet it is a curious fact that even I, with all my tendency and desire to believe spiritualistically, and with all my faith in your power of observing and your thorough truthfulness, feel as if I wanted to see for myself; and it is quite painful to me to think how much more proof I want. Painful, I say, because I see that it is not reason which convinces a man, unless a fact is repeated so frequently that the impression becomes like a habit of mind, an old acquaintance, a thing known so long that it cannot be doubted. This is a curious phase of man's mind, and it is remarkably strong in scientific men—stronger than in others, I think. For this reason we must not always call a man dishonest because he does not yield to evidence for a long time. The old wall of belief must be broken by much battering."

opportunities are not now as good as they were some time ago, when Mr. D. D. Home was in good health, and Miss Kate Fox (now Mrs. Jencken) was free from domestic and maternal occupations, I feel compelled to suspend further investigation for the present.

To obtain free access to some persons abundantly endowed with the power I am experimenting upon, now involves more favour than a scientific investigator should be expected to make of it. Spiritualism amongst its more devout followers is a religion. The mediums, in many cases young members of the family, are guarded with a seclusion and jealousy which an outsider can penetrate with difficulty. Being earnest and conscientious believers in the truth of certain doctrines which they hold to be substantiated by what appear to them to be miraculous occurrences, they seem to hold the presence of scientific investigation as a profanation of the shrine. As a personal favour I have more than once been allowed to be present at meetings that presented rather the form of a religious ceremony than of a spiritualistic *séance*. But to be admitted by favour once or twice, as a stranger might be allowed to witness the Eleusinian mysteries, or a Gentile to peep within the Holy of Holies, is not the way to ascertain facts and discover laws. To gratify curiosity is one thing; to carry on systematic research is another. I am seeking the truth continually. On a few occasions, indeed, I have been allowed to apply tests and impose conditions; but only once or twice have I been permitted to carry off the priestess from her shrine, and in my own house, surrounded by my own friends, to enjoy opportunities of testing the phenomena I had witnessed elsewhere under less conclusive conditions.* My observations on these cases will find their due place in the work I am about to publish.

Following the plan adopted on previous occasions,—a plan which, however much it offended the prejudices of some critics, I have good reason to know was acceptable to the readers of the "Quarterly Journal of Science,"—I intended to embody the results of my labour in the form of one or two articles for this journal. However, on going over my notes, I find such a wealth of facts, such a superabundance of evidence, so overwhelming a mass of testi-

* In this paper I give no instances and use no arguments drawn from these exceptional cases. Without this explanation it might be thought that the immense number of facts I have accumulated were principally obtained on the few occasions here referred to, and the objection would naturally arise of insufficiency of scrutiny from want of time.

mony, all of which will have to be marshalled in order, that I could fill several numbers of the "Quarterly." I must therefore be content on this occasion with an outline only of my labours, leaving proofs and full details to another occasion.

My principal object will be to place on record a series of actual occurrences which have taken place in my own house, in the presence of trustworthy witnesses, and under as strict test conditions as I could devise. Every fact which I have observed is, moreover, corroborated by the records of independent observers at other times and places. It will be seen that the facts are of the most astounding character, and seem utterly irreconcilable with all known theories of modern science. Having satisfied myself of their *truth*, it would be moral cowardice to withhold my testimony because my previous publications were ridiculed by critics and others who knew nothing whatever of the subject, and who were too prejudiced to see and judge for themselves whether or not there was truth in the phenomena; I shall state simply what I have seen and proved by repeated experiment and test, and "I have yet to learn that it is irrational to endeavour to discover the causes of unexplained phenomena."

At the commencement, I must correct one or two errors which have taken firm possession of the public mind. One is that *darkness* is essential to the phenomena. This is by no means the case. Except where darkness has been a necessary condition, as with some of the phenomena of luminous appearances, and in a few other instances, everything recorded has taken place *in the light*. In the few cases where the phenomena noted have occurred in darkness I have been very particular to mention the fact; moreover some special reason can be shown for the exclusion of light, or the results have been produced under such perfect test conditions that the suppression of one of the senses has not really weakened the evidence.

Another common error is that the occurrences can be witnessed only at certain times and places,—in the rooms of the medium, or at hours previously arranged; and arguing from this erroneous supposition, an analogy has been insisted on between the phenomena called spiritual and the feats of legerdemain by professional "conjurers" and "wizards," exhibited on their own platform and surrounded by all the appliances of their art.

To show how far this is from the truth, I need only say that, with very few exceptions, the many hundreds of facts

I am prepared to attest,—facts which to imitate by known mechanical or physical means would baffle the skill of a Houdin, a Bosco, or an Anderson, backed with all the resources of elaborate machinery and the practice of years,—have all taken place in my own house, at times appointed by myself, and under circumstances which absolutely precluded the employment of the very simplest instrumental aids.

A third error is that the medium must select his own circle of friends and associates at a *seance;* that these friends must be thorough believers in the truth of whatever doctrine the medium enunciates; and that *conditions* are imposed on any person present of an investigating turn of mind, which entirely preclude accurate observation and facilitate trickery and deception. In reply to this I can state that, (with the exception of the very few cases to which I have alluded in a previous paragraph* where, whatever might have been the motive for exclusiveness, it certainly was not the veiling of deception), I have chosen my own circle of friends, have introduced any hard-headed unbeliever whom I pleased, and have generally imposed my own terms, which have been carefully chosen to prevent the possibility of fraud. Having gradually ascertained some of the conditions which facilitate the occurrence of the phenomena, my modes of conducting these inquiries have generally been attended with equal and, indeed, in most cases with more, success than on other occasions, where, through mistaken notions of the importance of certain trifling observances, the conditions imposed might render less easy the detection of fraud.

I have said that darkness is not essential. It is, however, a well-ascertained fact that when the force is weak a bright light exerts an interfering action on some of the phenomena. The power possessed by Mr. Home is sufficiently strong to withstand this antagonistic influence; consequently, he always objects to darkness at his *séances.* Indeed, except on two occasions, when, for some particular experiments of my own, light was excluded, everything which I have witnessed with him has taken place in the light. I have had many opportunities of testing the action of light of different sources and colours, such as sun-light, diffused day light, moon light, gas, lamp, and candle light, electric light from a vacuum tube, homogeneous yellow light, &c. The interfering rays appear to be those at the extreme end of the spectrum.

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* See note on page 83.

I now proceed to classify some of the phenomena which have come under my notice, proceeding from the simple to the more complex, and briefly giving under each heading an outline of some of the evidence I am prepared to bring forward. My readers will remember that, with the exception of cases specially mentioned, the occurrences have taken place *in my own house, in the light, and with only private friends present* besides the medium. In the contemplated volume I propose to give in full detail the tests and precautions adopted on each occasion, with names of witnesses. I only briefly allude to them in this article.

Class I.

The Movement of Heavy Bodies with Contact, but without Mechanical Exertion.

This is one of the simplest forms of the phenomena observed. It varies in degree from a quivering or vibration of the room and its contents to the actual rising into the air of a heavy body when the hand is placed on it. The retort is obvious that if people are touching a thing when it moves, they push it, or pull it, or lift it; I have proved experimentally that this is not the case in numerous instances, but as a matter of evidence I attach little importance to this class of phenomena by itself, and only mention them as a preliminary to other movements of the same kind, but without contact.

These movements and indeed I may say the same of every kind of phenomenon are generally preceded by a peculiar cold air, sometimes amounting to a decided wind. I have had sheets of paper blown about by it, and a thermometer lowered several degrees. On some occasions, which I will subsequently give more in detail, I have not detected any actual movement of the air, but the cold has been so intense that I could only compare it to that felt when the hand has been within a few inches of frozen mercury.

Class II.

The Phenomena of Percussive and other Allied Sounds.

The popular name of "raps" conveys a very erroneous impression of this class of phenomena. At different times, during my experiments, I have heard delicate ticks, as with the point of a pin; a cascade of sharp sounds as from an induction coil in full work; detonations in the air; sharp metallic taps; a cracking like that heard when a frictional

machine is at work; sounds like scratching; the twittering as of a bird, &c.

These sounds are noticed with almost every medium, each having a special peculiarity; they are more varied with Mr. Home, but for power and certainty I have met with no one who at all approached Miss Kate Fox. For several months I enjoyed almost unlimited opportunity of testing the various phenomena occurring in the presence of this lady, and I especially examined the phenomena of these sounds. With mediums, generally, it is necessary to sit for a formal *séance* before anything is heard; but in the case of Miss Fox it seems only necessary for her to place her hand on any substance for loud thuds to be heard in it, like a triple pulsation, sometimes loud enough to be heard several rooms off. In this manner I have heard them in a living tree—on a sheet of glass—on a stretched iron wire—on a stretched membrane—a tambourine—on the roof of a cab—and on the floor of a theatre. Moreover, actual contact is not always necessary; I have had these sounds proceeding from the floor, walls, &c., when the medium's hands and feet were held—when she was standing on a chair—when she was suspended in a swing from the ceiling—when she was enclosed in a wire cage—and when she had fallen fainting on a sofa. I have heard them on a glass harmonicon—I have felt them on my own shoulder and under my own hands. I have heard them on a sheet of paper, held between the fingers by a piece of thread passed through one corner. With a full knowledge of the numerous theories which have been started, chiefly in America, to explain these sounds, I have tested them in every way that I could devise, until there has been no escape from the conviction that they were true objective occurrences not produced by trickery or mechanical means.

An important question here forces itself upon the attention. *Are the movements and sounds governed by intelligence?* At a very early stage of the inquiry, it was seen that the power producing the phenomena was not merely a blind force, but was associated with or governed by intelligence: thus the sounds to which I have just alluded will be repeated a definite number of times, they will come loud or faint, and in different places at request; and by a pre-arranged code of signals, questions are answered, and messages given with more or less accuracy.

The intelligence governing the phenomena is sometimes manifestly below that of the medium. It is frequently in direct opposition to the wishes of the medium: when a

determination has been expressed to do something which might not be considered quite right, I have known urgent messages given to induce a reconsideration. The intelligence is sometimes of such a character as to lead to the belief that it does not emanate from any person present.

Several instances can be given to prove each of these statements, but the subject will be more fully discussed subsequently, when treating of the source of the intelligence.

Class III.

The Alteration of Weight of Bodies.

I have repeated the experiments already described in this Journal, in different forms, and with several mediums. I need not further allude to them here.

Class IV.

Movements of Heavy Substances when at a Distance from the Medium.

The instances in which heavy bodies, such as tables, chairs, sofas, &c. have been moved, when the medium has not been touching them, are very numerous. I will briefly mention a few of the most striking. My own chair has been twisted partly round, whilst my feet were off the floor. A chair was seen by all present to move slowly up to the table from a far corner, when all were watching it; on another occasion an arm chair moved to where we were sitting, and then moved slowly back again (a distance of about three feet) at my request. On three successive evenings a small table moved slowly across the room, under conditions which I had specially pre-arranged, so as to answer any objection which might be raised to the evidence. I have had several repetitions of the experiment considered by the Committee of the Dialectical Society to be conclusive, viz., the movement of a heavy table in full light, the chairs turned with their backs to the table, about a foot off, and each person kneeling on his chair, with hands resting over the backs of the chair, but not touching the table. On one occasion this took place when I was moving about so as to see how every one was placed.

Class V.

The Rising of Tables and Chairs off the ground, without contact with any person.

A remark is generally made when occurrences of this kind are mentioned, Why is it only tables and chairs which do

these things? Why is this property peculiar to furniture? I might reply that I only observe and record facts, and do not profess to enter into the Why and Wherefore; but indeed it will be obvious that if a heavy inanimate body in an ordinary dining-room has to rise off the floor, it cannot very well be anything else but a table or a chair. That this propensity is not specially attached to furniture, I have abundant evidence; but, like other experimental demonstrators, the intelligence or power, whatever it may be, which produces these phenomena can only work with the materials which are available.

On five separate occasions, a heavy dining-table rose between a few inches and 1½ feet off the floor, under special circumstances, which rendered trickery impossible. On another occasion, a heavy table rose from the floor in full light, while I was holding the medium's hands and feet. On another occasion the table rose from the floor, not only when no person was touching it, but under conditions which I had pre-arranged so as to assure unquestionable proof of the fact.

Class VI.

The Levitation of Human Beings.

This has occurred in my presence on four occasions in darkness. The test conditions under which they took place were quite satisfactory, so far as the judgment was concerned; but ocular demonstration of such a fact is so necessary to disturb our pre-formed opinions as to "the naturally possible and impossible," that I will here only mention cases in which the deductions of reason were confirmed by the sense of sight.

On one occasion I witnessed a chair, with a lady sitting on it, rise several inches from the ground. On another occasion, to avoid the suspicion of this being in some way performed by herself, the lady knelt on the chair in such manner that its four feet were visible to us. It then rose about three inches, remained suspended for about ten seconds, and then slowly descended. At another time two children, on separate occasions, rose from the floor with their chairs, in full daylight, under (to me) most satisfactory conditions; for I was kneeling and keeping close watch upon the feet of the chair, and observing that no one might touch them.

The most striking cases of levitation which I have

witnessed have been with Mr. Home. On three separate occasions have I seen him raised completely from the floor of the room. Once sitting in an easy chair, once kneeling on his chair, and once standing up. On each occasion I had full opportunity of watching the occurrence as it was taking place.

There are at least a hundred recorded instances of Mr. Home's rising from the ground, in the presence of as many separate persons, and I have heard from the lips of the three witnesses to the most striking occurrence of this kind —the Earl of Dunraven, Lord Lindsay, and Captain C. Wynne—their own most minute accounts of what took place. To reject the recorded evidence on this subject is to reject all human testimony whatever; for no fact in sacred or profane history is supported by a stronger array of proofs.

The accumulated testimony establishing Mr. Home's levitations is overwhelming. It is greatly to be desired that some person, whose evidence would be accepted as conclusive by the scientific world—if indeed there lives a person whose testimony *in favour* of such phenomena would be taken—would seriously and patiently examine these alleged facts. Most of the eye-witnesses to these levitations are now living, and would, doubtless, be willing to give their evidence. But, in a few years, such *direct* evidence will be difficult, if not impossible, to be obtained.

Class VII.

Movement of Various Small Articles without Contact with any Person.

Under this heading I propose to describe some special phenomena which I have witnessed. I can do little more here than allude to some of the more striking facts, all of which, be it remembered, have occurred under circumstances that render trickery impossible. But it is idle to attribute these results to trickery, for I would again remind my readers that what I relate has not been accomplished at the house of a medium, but in my own house, where preparations have been quite impossible. A medium, walking into my dining-room, cannot, while seated in one part of the room with a number of persons keenly watching him, by trickery make an accordion play in *my own* hand when I hold it key downwards, or cause the same accordion to float about the room playing all the time. He cannot

introduce machinery which will wave window-curtains or pull up Venetian blinds 8 feet off, tie a knot in a handkerchief and place it in a far corner of the room, sound notes on a distant piano, cause a card-plate to float about the room, raise a water-bottle and tumbler from the table, make a coral necklace rise on end, cause a fan to move about and fan the company, or set in motion a pendulum when enclosed in a glass case firmly cemented to the wall.

Class VIII.

Luminous Appearances.

These, being rather faint, generally require the room to be darkened. I need scarcely remind my readers again that, under these circumstances, I have taken proper precautions to avoid being imposed upon by phosphorised oil, or other means. Moreover, many of these lights are such as I have tried to imitate artificially, but cannot.

Under the strictest test conditions, I have seen a solid self-luminous body, the size and nearly the shape of a turkey's egg, float noiselessly about the room, at one time higher than any one present could reach standing on tiptoe, and then gently descend to the floor. It was visible for more than ten minutes, and before it faded away it struck the table three times with a sound like that of a hard, solid body. During this time the medium was lying back, apparently insensible in an easy chair.

I have seen luminous points of light darting about and settling on the heads of different persons; I have had questions answered by the flashing of a bright light a desired number of times in front of my face. I have seen sparks of light rising from the table to the ceiling, and again falling upon the table, striking it with an audible sound. I have had an alphabetic communication given by luminous flashes occurring before me in the air, whilst my hand was moving about amongst them. I have seen a luminous cloud floating upwards to a picture. Under the strictest test conditions, I have more than once had a solid, self-luminous, crystalline body placed in my hand by a hand which did not belong to any person in the room. *In the light* I have seen a luminous cloud hover over a heliotrope on a side table, break a sprig off, and carry the sprig to a lady; and on some occasions I have seen a similar luminous cloud visibly condense to the form of a hand and carry small objects about. These, however, more properly belong to the next class of phenomena.

Class IX.

The Appearance of Hands, either Self-Luminous or Visible by Ordinary Light.

The forms of hands are frequently *felt* at dark *séances*, or under circumstances where they cannot be seen. More rarely I have *seen* the hands. I will here give no instances in which the phenomenon has occurred in darkness, but will simply select a few of the numerous instances in which I have seen the hands in the light.

A beautifully formed small hand rose up from an opening in a dining-table and gave me a flower; it appeared and then disappeared three times at intervals, affording me ample opportunity of satisfying myself that it was as real in appearance as my own. This occurred in the light in my own room, whilst I was holding the medium's hands and feet.

On another occasion a small hand and arm, like a baby's, appeared playing about a lady who was sitting next to me. It then passed to me and patted my arm and pulled my coat several times.

At another time a finger and thumb were seen to pick the petals from a flower in Mr. Home's button-hole, and lay them in front of several persons who were sitting near him.

A hand has repeatedly been seen by myself and others playing the keys of an accordion, both of the medium's hands being visible at the same time, and sometimes being held by those near him.

The hands and fingers do not always appear to me to be solid and life-like. Sometimes, indeed, they present more the appearance of a nebulous cloud partly condensed into the form of a hand. This is not equally visible to all present. For instance, a flower or other small object is seen to move; one person present will see a luminous cloud hovering over it, another will detect a nebulous-looking hand, whilst others will see nothing at all but the moving flower. I have more than once seen, first an object move, then a luminous cloud appear to form about it, and, lastly, the cloud condense into shape and become a perfectly-formed hand. At this stage, the hand is visible to all present. It is not always a mere form, but sometimes appears perfectly life-like and graceful, the fingers moving and the flesh apparently as human as that of any in the room. At the wrist, or arm, it becomes hazy, and fades off into a luminous cloud.

To the touch, the hand sometimes appears icy cold and dead, at other times, warm and life-like, grasping my own with the firm pressure of an old friend.

I have retained one of these hands in my own, firmly resolved not to let it escape. There was no struggle or effort made to get loose, but it gradually seemed to resolve itself into vapour, and faded in that manner from my grasp.

Class X.

Direct Writing.

This is the term employed to express writing which is not produced by any person present. I have had words and messages repeatedly written on privately-marked paper, under the most rigid test conditions, and have heard the pencil moving over the paper in the dark. The conditions —pre-arranged by myself—have been so strict as to be equally convincing to my mind as if I had seen the written characters formed. But as space will not allow me to enter into full particulars, I will merely select two instances in which my eyes as well as ears were witnesses to the operation.

The first instance which I shall give took place, it is true, at a dark *séance*, but the result was not less satisfactory on that account. I was sitting next to the medium, Miss Fox, the only other persons present being my wife and a lady relative, and I was holding the medium's two hands in one of mine, whilst her feet were resting on my feet. Paper was on the table before us, and my disengaged hand was holding a pencil.

A luminous hand came down from the upper part of the room, and after hovering near me for a few seconds, took the pencil from my hand, rapidly wrote on a sheet of paper, threw the pencil down, and then rose up over our heads, gradually fading into darkness.

My second instance may be considered the record of a failure. "A good failure often teaches more than the most successful experiment." It took place in the light, in my own room, with only a few private friends and Mr. Home present. Several circumstances, to which I need not further allude, had shown that the power that evening was strong. I therefore expressed a wish to witness the actual production of a written message such as I had heard described a short time before by a friend. Immediately an alphabetic communication was made as follows—"We will try." A pencil and some sheets of paper had been lying on the

centre of the table; presently the pencil rose up on its point, and after advancing by hesitating jerks to the paper fell down. It then rose and again fell. A third time it tried, but with no better result. After three unsuccessful attempts, a small wooden lath, which was lying near upon the table, slid towards the pencil, and rose a few inches from the table; the pencil rose again, and propping itself against the lath, the two together made an effort to mark the paper. It fell, and then a joint effort was again made. After a third trial the lath gave it up and moved back to its place, the pencil lay as it fell across the paper, and an alphabetic message told us—"We have tried to do as you asked, but our power is exhausted."

CLASS XI.

Phantom Forms and Faces.

These are the rarest of the phenomena I have witnessed. The conditions requisite for their appearance appear to be so delicate, and such trifles interfere with their production, that only on very few occasions have I witnessed them under satisfactory test conditions. I will mention two of these cases.

In the dusk of the evening, during a *séance* with Mr. Home at my house, the curtains of a window about eight feet from Mr. Home were seen to move. A dark, shadowy, semi-transparent form, like that of a man, was then seen by all present standing near the window, waving the curtain with his hand. As we looked, the form faded away and the curtains ceased to move.

The following is a still more striking instance. As in the former case, Mr. Home was the medium. A phantom form came from a corner of the room, took an accordion in its hand, and then glided about the room playing the instrument. The form was visible to all present for many minutes, Mr. Home also being seen at the same time. Coming rather close to a lady who was sitting apart from the rest of the company, she gave a slight cry, upon which it vanished.

CLASS XII.

Special Instances which seem to point to the Agency of an Exterior Intelligence.

It has already been shown that the phenomena are governed by an intelligence. It becomes a question of importance as to the source of that intelligence. Is it the

intelligence of the medium, of any of the other persons in in the room, or is it an exterior intelligence? Without wishing at present to speak positively on this point, I may say that whilst I have observed many circumstances which appear to show that the will and intelligence of the medium have much to do with the phenomena,* I have observed some circumstances which seem conclusively to point to the agency of an outside intelligence, not belonging to any human being in the room. Space does not allow me to give here all the arguments which can be adduced to prove these points, but I will briefly mention one or two circumstances out of many.

I have been present when several phenomena were going on at the same time, some being unknown to the medium. I have been with Miss Fox when she has been writing a message automatically to one person present, whilst a message to another person on another subject was being given alphabetically by means of "raps," and the whole time she was conversing freely with a third person on a subject totally different from either. Perhaps a more striking instance is the following:—

During a *séance* with Mr. Home, a small lath, which I have before mentioned, moved across the table to me, in the light, and delivered a message to me by tapping my hand; I repeating the alphabet, and the lath tapping me at the right letters. The other end of the lath was resting on the table, some distance from Mr. Home's hands.

The taps were so sharp and clear, and the lath was evidently so well under control of the invisible power which was governing its movements, that I said, "Can the intelligence governing the motion of this lath change the character of the movements, and give me a telegraphic message through the Morse alphabet by taps on my hand?" (I have every reason to believe that the Morse code was quite unknown to any other person present, and it was only imperfectly known to me). Immediately I said this, the character of the taps changed, and the message was continued in the way I had requested. The letters were given too rapidly for me to do more than catch a word here and there, and consequently I lost the message; but I heard sufficient to convince me that there was a good Morse operator at the other end of the line, wherever that might be.

* I do not wish my meaning to be misunderstood. What I mean is, *not* that the medium's will and intelligence are actively employed in any conscious or dishonest way in the production of the phenomena, but that they sometimes appear to act in an unconscious manner.

Another instance. A lady was writing automatically by means of the planchette. I was trying to devise a means of proving that what she wrote was not due to "unconscious cerebration." The planchette, as it always does, insisted that, although it was moved by the hand and arm of the lady, the *intelligence* was that of an invisible being who was playing on her brain as on a musical instrument, and thus moving her muscles. I therefore said to this intelligence, "Can you see the contents of this room?" "Yes," wrote the planchette. "Can you see to read this newspaper?" said I, putting my finger on a copy of the *Times*, which was on a table behind me, but without looking at it. "Yes" was the reply of the planchette. "Well," I said, "if you can see that, write the word which is now covered by my finger, and I will believe you." The planchette commenced to move. Slowly and with great difficulty, the word "however" was written. I turned round and saw that the word "however" was covered by the tip of my finger.

I had purposely avoided looking at the newspaper when I tried this experiment, and it was impossible for the lady, had she tried, to have seen any of the printed words, for she was sitting at one table, and the paper was on another table behind, my body intervening.

Class XIII.

Miscellaneous Occurrences of a Complex Character.

Under this heading I propose to give several occurrences which cannot be otherwise classified owing to their complex character. Out of more than a dozen cases, I will select two. The first occurred in the presence of Miss Kate Fox. To render it intelligible, I must enter into some details.

Miss Fox had promised to give me a *séance* at my house one evening in the spring of last year. Whilst waiting for her, a lady relative, with my two eldest sons, aged fourteen and eleven, were sitting in the dining-room where the *séances* were always held, and I was sitting by myself, writing in the library. Hearing a cab drive up and the bell ring, I opened the door to Miss Fox, and took her directly into the dining-room. She said she would not go upstairs, as she could not stay very long, but laid her bonnet and shawl on a chair in the room. I then went to the dining-room door, and telling the two boys to go into the library and proceed with their lessons, I closed the door behind them, locked it, and (according to my usual custom at *séances*) put the key in my pocket.

We sat down, Miss Fox being on my right hand and the other lady on my left. An Alphabetic message was soon given to turn the gas out, and we thereupon sat in total darkness, I holding Miss Fox's two hands in one of mine the whole time. Very soon, a message was given in the following words, "We are going to bring something to show our power;" and almost immediately afterwards, we all heard the tinkling of a bell, not stationary, but moving about in all parts of the room: at one time by the wall, at another in a further corner of the room, now touching me on the head, and now tapping against the floor. After ringing about the room in this manner for fully five minutes, it fell upon the table close to my hands.

During the time this was going on, no one moved and Miss Fox's hands were perfectly quiet. I remarked that it could not be my little hand-bell which was ringing, for I left that in the library. (Shortly before Miss Fox came, I had occasion to refer to a book, which was lying on a corner of a book-shelf. The bell was on the book, and I put it on one side to get the book. That little incident had impressed on my mind the fact of the bell being in the library.) The gas was burning brightly in the hall outside the dining-room door, so that this could not be opened without letting light into the room, even had there been an accomplice in the house with a duplicate key, which there certainly was not.

I struck a light. There, sure enough, was my own bell lying on the table before me. I went straight into the library. A glance showed that the bell was not where it ought to have been. I said to my eldest boy, "Do you know where my little bell is?" "Yes, papa," he replied, "there it is," pointing to where I had left it. He looked up as he said this, and then continued, "No—it's not there, but it was there a little time ago." "How do you mean?—has anyone come in and taken it?" "No," said he, "no one has been in; but I am sure it was there, because when you sent us in here out of the dining-room, J. (the youngest boy) began ringing it so that I could no go on with my lessons, and I told him to stop." J. corroborated this, and said that, after ringing it, he put the bell down where he had found it.

The second circumstance which I will relate occurred in the light, one Sunday evening, only Mr. Home and members of my family being present. My wife and I had been spending the day in the country, and had brought home a few flowers we had gathered. On reaching home, we gave them to a servant to put them in water. Mr. Home came soon after, and we at once proceeded to the dining-

room. As we were sitting down, a servant brought in the flowers which she had arranged in a vase. I placed it in the centre of the dining-table, which was without a cloth. This was the first time Mr. Home had seen these flowers.

After several phenomena had occurred, the conversation turned upon some circumstances which seemed only explicable on the assumption that matter had actually passed through a solid substance. Thereupon a message was given by means of the alphabet: "It is impossible for matter to pass through matter, but we will show you what we can do." We waited in silence. Presently a luminous appearance was seen hovering over the bouquet of flowers, and then, in full view of all present, a piece of china-grass 15 inches long, which formed the centre ornament of the bouquet, slowly rose from the other flowers, and then descended to the table in front of the vase between it and Mr. Home. It did not stop on reaching the table, but went straight through it, and we all watched it till it had entirely passed through. Immediately on the disappearance of the grass, my wife, who was sitting near Mr. Home, saw a hand come up from under the table between them, holding the piece of grass. It tapped her on the shoulder two or three times with a sound audible to all, then laid the grass on the floor, and disappeared. Only two persons saw the hand, but all in the room saw the piece of grass moving about as I have described. During the time this was taking place, Mr. Home's hands were seen by all to be quietly resting on the table in front of him. The place where the grass disappeared was 18 inches from his hands. The table was a telescope dining-table, opening with a screw; there was no leaf in it, and the junction of the two sides formed a narrow crack down the middle. The grass had passed through this chink, which I measured, and found to be barely $\frac{1}{8}$th inch wide. The stem of the piece of grass was far too thick to enable me to force it through this crack without injuring it, yet we had all seen it pass through quietly and smoothly; and on examination, it did not show the slightest signs of pressure or abrasion.

THEORIES TO ACCOUNT FOR THE PHENOMENA OBSERVED.

First Theory.—The phenomena are all the results of tricks, clever mechanical arrangements, or legerdemain; the mediums are impostors, and the rest of the company fools.

It is obvious that this theory can only account for a very small proportion of the facts observed. I am willing to

admit that some so-called mediums of whom the public have heard much are arrant impostors who have taken advantage of the public demand for spiritualistic excitement to fill their purses with easily earned guineas; whilst others who have no pecuniary motive for imposture are tempted to cheat, it would seem, solely by a desire for notoriety. I have met with several cases of imposture, some very ingenious, others so palpable, that no person who has witnessed the genuine phenomena could be taken in by them. An inquirer into the subject finding one of these cases at his first initiation is disgusted with what he detects at once to be an imposture; and he not unnaturally gives vent to his feelings, privately or in print, by a sweeping denunciation of the whole genus "medium." Again with a thoroughly genuine medium, the first phenomena which are observed are generally slight movements of the table, and faint taps under the medium's hands or feet. These of course are quite easy to be imitated by the medium, or anyone at the table. If, as sometimes occurs, nothing else takes place, the sceptical observer goes away with the firm impression that his superior acuteness detected cheating on the part of the medium, who was consequently afraid to proceed with any more tricks in *his* presence. He, too, writes to the newspapers exposing the whole imposture, and probably indulges in moral sentiments about the sad spectacle of persons, apparently intelligent, being taken in by imposture which he detected at once.

There is a wide difference between the tricks of a professional conjurer, surrounded by his apparatus, and aided by any number of concealed assistants and confederates, deceiving the senses by clever sleight of hand on his own platform, and the phenomena occurring in the presence of Mr. Home, which take place in the light, in a private room that almost up to the commencement of the *séance* has been occupied as a living room, and surrounded by private friends of my own, who not only will not countenance the slightest deception, but who are watching narrowly every thing that takes place. Moreover, Mr. Home has frequently been searched before and after the *séances*, and he *always* offers to allow it. During the most remarkable occurrences I have occasionally held both his hands, and placed my feet on his feet. On no single occasion have I proposed a modification of arrangements for the purpose of rendering trickery less possible which he has not at once assented to, and frequently he has himself drawn attention to tests which might be tried.

I speak chiefly of Mr, Home, as he is so much more powerful than most of the other mediums I have experimented with. But with all I have taken such precautions as place trickery out of the list of possible explanations.

Be it remembered that an explanation to be of any value must satisfy *all* the conditions of the problem. It is not enough for a person, who has perhaps seen only a few of the inferior phenomena, to say "I suspect it was all cheating," or, "I saw how some of the tricks could be done."

Second Theory.—The persons at a *séance* are the victims of a sort of mania or delusion, and imagine phenomena to occur which have no real objective existence.

Third Theory.—The whole is the result of conscious or unconscious cerebral action.

These two theories are evidently incapable of embracing more than a small portion of the phenomena, and they are improbable explanations for even those. They may be dismissed very briefly.

I now approach the "Spiritual" theories. It must be remembered that the word "spirits" is used in a very vague sense by the generality of people.

Fourth Theory.—The result of the spirit of the medium, perhaps in association with the spirits of some or all of the people present.

Fifth Theory.—The actions of evil spirits or devils, personifying who or what they please, in order to undermine Christianity and ruin men's souls.

Sixth Theory.—The actions of a separate order of beings, living on this earth, but invisible and immaterial to us. Able, however, occasionally to manifest their presence. Known in almost all countries and ages as demons (not necessarily bad), gnomes, fairies, kobolds, elves, goblins, Puck, &c.

Seventh Theory.—The actions of departed human beings—the spiritual theory *par excellence.*

Eighth Theory.—(The Psychic Force Theory).—This is a necessary adjunct to the 4th, 5th, 6th, and 7th, theories rather than a theory by itself.

According to this theory the "medium," or the circle of people associated together as a whole, is supposed to possess a force, power, influence, virtue, or gift, by means of which intelligent beings are enabled to produce the phenomena observed. What these intelligent beings are, is a subject for other theories.

It is obvious that a "medium" possesses a *something* which is not possessed by an ordinary being. Give this

something a name. Call it "*x*" if you like. Mr. Serjeant Cox calls it Psychic Force. There has been so much misunderstanding on this subject that I think it best to give the following explanation in Mr. Serjeant Cox's own words :—

"The Theory of *Psychic Force* is in itself merely the recognition of the now almost undisputed fact that under certain conditions, as yet but imperfectly ascertained, and within a limited, but as yet undefined, distance from the bodies of certain persons having a special nerve organisation, a Force operates by which, without muscular contact or connection, action at a distance is caused, and visible motions and audible sounds are produced in solid substances. As the presence of such an organisation is necessary to the phenomenon, it is reasonably concluded that the Force does, in some manner as yet unknown, proceed from that organisation. As the organism is itself moved and directed within its structure by a Force which either is, or is controlled by, the Soul, Spirit, or Mind (call it what we may) which constitutes the individual being we term 'the Man,' it is an equally reasonable conclusion that the Force which causes the motions beyond the limits of the body is the same Force that produces motion within the limits of the body. And, inasmuch as the external force is seen to be often directed by Intelligence, it is an equally reasonable conclusion that the directing Intelligence of the external force is the same Intelligence that directs the Force internally. This is the force to which the name of *Psychic Force* has been given by me as properly designating a force which I thus contend to be traced back to the Soul or Mind of the Man as its source. But I, and all who adopt this theory of Psychic Force as being the agent through which the phenomena are produced, do not thereby intend to assert that this Psychic Force may not be sometimes seized and directed by some other Intelligence than the Mind of the Psychic. The most ardent Spiritualists practically admit the existence of Psychic Force under the very inappropriate name of Magnetism (to which it has no affinity whatever), for they assert that the Spirits of the Dead can only do the acts attributed to them by using the Magnetism (that is, the Psychic Force) of the Medium. The difference between the advocates of Psychic Force and the Spiritualists consists in this—that we contend that there is as yet insufficient proof of any other directing agent than the Intelligence of the Medium, and no proof whatever of the agency of Spirits of the Dead ; while the Spiritualists hold it as a faith, not demanding further proof, that Spirits of the Dead are the sole agents in

the production of all the phenomena. Thus the controversy resolves itself into a pure question of *fact*, only to be determined by a laborious and long-continued series of experiments and an extensive collection of psychological *facts*, which should be the first duty of the Psychological Society, the formation of which is now in progress."

MISS FLORENCE COOK'S MEDIUMSHIP.

[THE following letters appeared in the Spiritualistic journals at the dates which they bear. They form a fit conclusion to this series of papers] :—

SIR,—It has been my endeavour to keep as clear of controversy as possible, in writing or speaking about so inflammatory a topic as the phenomena called Spiritual. Except in very few cases, where the prominent position of my opponent would have caused my silence to be ascribed to other than the real motives, I have made no reply to the attacks and misrepresentations which my connection with this subject has entailed upon me.

The case is otherwise, however, when a few lines from me may perhaps assist in removing an unjust suspicion which is cast upon another. And when this other person is a woman,—young sensitive, and innocent,—it becomes especially a duty for me to give the weight of my testimony in favour of her whom I believe to be unjustly accused.

Among all the arguments brought forward on either side touching the phenomena of Miss Cook's mediumship, I see very few *facts* stated in such a way as to lead an unprejudiced reader, provided he can trust the judgment and veracity of the narrator, to say, "Here at last is absolute proof." I see plenty of strong assertion, much unintentional exaggeration, endless conjecture and supposition, no little insinuation of fraud, and some amount of vulgar buffoonery; but no one has come forward with a positive assertion, based upon the evidence of his own senses, to the effect that when the form which calls itself "Katie" is visible in the room, the body of Miss Cook is either actually in the cabinet or is not there.

It appears to me that the whole question narrows itself into this small compass. Let either of the above alternatives be proved to be a fact, and all the other collateral questions may be dismissed. But the proof must be absolute, and not based upon inferential reasoning, or assumed

upon the supposed integrity of seals, knots, and sewing; for I have reason to know that the power at work in these phenomena, like Love, "laughs at locksmiths."

I was in hopes that some of those friends of Miss Cook, who have attended her *séances* almost from the commencement, and who appear to have been highly favoured in the tests they have received, would ere this, have borne testimony in her favour. In default, however, of evidence from those who have followed these phenomena from their beginning nearly three years ago, let me, who have only been admitted as it were, at the eleventh hour, state a circumstance which came under my notice at a *séance* to which I was invited by the favour of Miss Cook, a few days after the disgraceful occurrence which has given rise to this controversy.

The *séance* was held at the house of Mr. Luxmore, and the "cabinet" was a back drawing room, separated from the front room in which the company sat by a curtain.

The usual formality of searching the room and examining the fastenings having been gone through, Miss Cook entered the cabinet.

After a little time the form Katie appeared at the side of the curtain, but soon retreated, saying her medium was not well, and could not be put into a sufficiently deep sleep to make it safe for her to be left.

I was sitting within a few feet of the curtain close behind which Miss Cook was sitting, and I could frequently hear her moan and sob, as if in pain. This uneasiness continued at intervals nearly the whole duration of the *séance, and once, when the form of Katie was standing before me in the room, I distinctly heard a sobbing, moaning sound, identical with that which Miss Cook had been making at intervals the whole time of the séance, come from behind the curtain where the young lady was supposed to be sitting.*

I admit that the figure was startingly life-like and real, and, as far as I could see in the somewhat dim light, the features resembled those of Miss Cook; but still the positive evidence of one of my own senses that the moan came from Miss Cook in the cabinet, whilst the figure was outside, is too strong to be upset by a mere inference to the contrary, however well supported.

Your readers, sir, know me, and will, I hope, believe that I will not come hastily to an opinion, or ask them to agree with me on insufficient evidence. It is perhaps expecting too much to think that the little incident I have mentioned will have the same weight with them that it had with me.

But this I do beg of them—Let those who are inclined to judge Miss Cook harshly, suspend their judgment until I bring forward positive evidence which I think will be sufficient to settle the question.

Miss Cook is now devoting herself exclusively to a series of private *séances* with me and one or two friends. The *séances* will probably extend over some months, and I am promised that every desirable test shall be given to me. These *séances* have not been going on many weeks, but enough has taken place to thoroughly convince me of the perfect truth and honesty of Miss Cook, and to give me every reason to expect that the promises so freely made to me by Katie will be kept.

All I now ask is that your readers will not hastily assume that everything which is *primâ facie* suspicious necessarily implies deception, and that they will suspend their judgment until they hear from me again on this subject.—I am, &c.,

WILLIAM CROOKES.

20 MORNINGTON ROAD, LONDON,
February 3, 1874.

SPIRIT-FORMS.

IN a letter which I wrote to this journal early in February last, speaking of the phenomena of spirit-forms which have appeared through Miss Cook's mediumship, I said, "Let those who are inclined to judge Miss Cook harshly suspend their judgment until I bring forward positive evidence which I think will be sufficient to settle the question. Miss Cook is now devoting herself exclusively to a series of private *séances* with me and one or two friends. . . . Enough has taken place to thoroughly convince me of the perfect truth and honesty of Miss Cook, and to give me every reason to expect that the promises so freely made to me by Katie will be kept."

In that letter I described an incident which, to my mind, went very far towards convincing me that Katie and Miss Cook were two separate material beings. When Katie was outside the cabinet, standing before me, I heard a moaning noise from Miss Cook in the cabinet. I am happy to say that I have at last obtained the "absolute proof" to which I referred in the above-quoted letter.

I will, for the present, pass over most of the tests which

Katie has given me on the many occasions when Miss Cook has favoured me with *séances* at this house, and will only describe one or two which I have recently had. I have for some time past been experimenting with a phosphorus lamp, consisting of a 6-oz. or 8-oz. bottle, containing a little phosphorised oil, and tightly corked. I have had reason to hope that by the light of this lamp some of the mysterious phenomena of the cabinet might be rendered visible, and Katie has also expressed herself hopefully as to the same result.

On March 12th, during a *séance* here, after Katie had been walking amongst us and talking for some time, she retreated behind the curtain which separated my laboratory, where the company was sitting, from my library which did temporary duty as a cabinet. In a minute she came to the curtain and called me to her, saying, "Come into the room and lift my medium's head up, she has slipped down." Katie was then standing before me clothed in her usual white robes and turban head-dress. I immediately walked into the library up to Miss Cook, Katie stepping aside to allow me to pass. I found Miss Cook had slipped partially off the sofa, and her head was hanging in a very awkward position. I lifted her onto the sofa, and in so doing had satisfactory evidence, in spite of the darkness, that Miss Cook was not attired in the "Katie" costume, but had on her ordinary black velvet dress, and was in a deep trance. Not more than three seconds elapsed between my seeing the white-robed Katie standing before me and my raising Miss Cook on to the sofa from the position into which she had fallen.

On returning to my post of observation by the curtain, Katie again appeared, and said she thought she should be able to show herself and her medium to me at the same time. The gas was then turned out, and she asked for my phosphorus lamp. After exhibiting herself by it for some seconds, she handed it back to me, saying, "Now come in and see my medium." I closely followed her into the library, and by the light of my lamp saw Miss Cook lying on the sofa just as I had left her. I looked round for Katie, but she had disappeared. I called her, but there was no answer.

On resuming my place, Katie soon reappeared, and told me that she had been standing close to Miss Cook all the time. She then asked if she might try an experiment herself, and taking the phosphorus lamp from me she passed behind the curtain, asking me not to look in for the present.

In a few minutes she handed the lamp back to me, saying she could not succeed, as she had used up all the power, but would try again another time. My eldest son, a lad of fourteen, who was sitting opposite me, in such a position that he could see behind the curtain, tells me he distinctly saw the phosphorus lamp apparently floating about in space over Miss Cook, illuminating her as she lay motionless on the sofa, but he could not see anyone holding the lamp.

I pass on to a *séance* held last night at Hackney. Katie never appeared to greater perfection, and for nearly two hours she walked about the room, conversing familiarly with those present. On several occasions she took my arm when walking, and the impression conveyed to my mind that it was a living woman by my side, instead of a visitor from the other world, was so strong that the temptation to repeat a recent celebrated experiment became almost irresistible. Feeling, however, that if I had not a spirit, I had at all events a *lady* close to me, I asked her permission to clasp her in my arms, so as to be able to verify the interesting observations which a bold experimentalist has recently somewhat verbosely recorded. Permission was graciously given, and I accordingly did—well, as any gentleman would do under the circumstances. Mr. Volckman will be pleased to know that I can corroborate his statement that the "ghost" (not "struggling," however,) was as material a being as Miss Cook herself. But the sequel shows how wrong it is for an experimentalist, however accurate his observations may be, to venture to draw an important conclusion from an insufficient amount of evidence.

Katie now said she thought she should be able this time to show herself and Miss Cook together. I was to turn the gas out and then come with my phosphorus lamp into the room now used as a cabinet. This I did, having previously asked a friend who was skilful at shorthand to take down any statement I might make when in the cabinet, knowing the importance attaching to first impressions, and not wishing to leave more to memory than necessary. His notes are now before me.

I went cautiously into the room, it being dark, and felt about for Miss Cook. I found her crouching on the floor. Kneeling down, I let air enter the lamp, and by its light I saw the young lady dressed in black velvet, as she had been in the early part of the evening, and to all appearance perfectly senseless; she did not move when I took her hand and held the light quite close to her face, but continued

quietly breathing. Raising the lamp, I looked around and saw Katie standing close behind Miss Cook. She was robed in flowing white drapery as we had seen her previously during the *séance*. Holding one of Miss Cook's hands in mine, and still kneeling, I passed the lamp up and down so as to illuminate Katie's whole figure and satisfy myself thoroughly that I was really looking at the veritable Katie whom I had clasped in my arms a few minutes before, and not at the phantasm of a disordered brain. She did not speak, but moved her head and smiled in recognition. Three separate times did I carefully examine Miss Cook crouching before me, to be sure that the hand I held was that of a living woman, and three separate times did I turn the lamp to Katie and examine her with steadfast scrutiny until I had no doubt whatever of her objective reality. At last Miss Cook moved slightly, and Katie instantly motioned me to go away. I went to another part of the cabinet and then ceased to see Katie, but did not leave the room till Miss Cook woke up, and two of the visitors came in with a light.

Before concluding this article I wish to give some of the points of difference which I have observed between Miss Cook and Katie. Katie's height varies; in my house I have seen her six inches taller than Miss Cook. Last night, with bare feet and not "tip-toeing," she was four and a half inches taller than Miss Cook. Katie's neck was bare last night; the skin was perfectly smooth both to touch and sight, whilst on Miss Cook's neck is a large blister, which under similar circumstances is distinctly visible and rough to the touch. Katie's ears are unpierced, whilst Miss Cook habitually wears earrings. Katie's complexion is very fair, while that of Miss Cook is very dark. Katie's fingers are much longer than Miss Cook's, and her face is also larger. In manners and ways of expression there are also many decided differences.

Miss Cook's health is not good enough to allow of her giving more of these test *séances* for the next few weeks, and we have, therefore, strongly advised her to take an entire rest before recommencing the experimental campaign which I have sketched out for her, and the results of which I hope to be able to record at some future day.

20 Mornington Road, N.W.,
March 30th, 1874.

THE LAST OF KATIE KING.

THE PHOTOGRAPHING OF KATIE KING BY THE AID OF THE ELECTRIC LIGHT.

HAVING taken a very prominent part of late at Miss Cook's *séances*, and having been very successful in taking numerous photographs of Katie King by the aid of the electric light, I have thought that the publication of a few of the details would be of interest to the readers of the *Spiritualist*.

During the week before Katie took her departure she gave *séances* at my house almost nightly, to enable me to photograph her by artificial light. Five complete sets of photographic apparatus were accordingly fitted up for the purpose, consisting of five cameras, one of the whole-plate size, one half-plate, one quarter-plate, and two binocular stereoscopic cameras, which were all brought to bear upon Katie at the same time on each occasion on which she stood for her portrait. Five sensitising and fixing baths were used, and plenty of plates were cleaned ready for use in advance, so that there might be no hitch or delay during the photographing operations, which were performed by myself, aided by one assistant.

My library was used as a dark cabinet. It has folding doors opening into the laboratory; one of these doors was taken off its hinges, and a curtain suspended in its place to enable Katie to pass in and out easily. Those of our friends who were present were seated in the laboratory facing the curtain, and the cameras were placed a little behind them, ready to photograph Katie when she came outside, and to photograph anything also inside the cabinet, whenever the curtain was withdrawn for the purpose. Each evening there were three or four exposures of plates in the five cameras, giving at least fifteen separate pictures at each *séance;* some of these were spoilt in the developing, and some in regulating the amount of light. Altogether I have forty-four negatives, some inferior, some indifferent, and some excellent.

Katie instructed all the sitters but myself to keep their seats and to keep conditions, but for some time past she has given me permission to do what I liked—to touch her, and to enter and leave the cabinet almost whenever I pleased. I have frequently followed her into the cabinet, and have sometimes seen her and her medium together, but most generally I have found nobody but the entranced

medium lying on the floor, Katie and her white robes having instantaneously disappeared.

During the last six months Miss Cook has been a frequent visitor at my house, remaining sometimes a week at a time. She brings nothing with her but a little hand-bag, not locked; during the day she is constantly in the presence of Mrs. Crookes, myself, or some other member of my family, and, not sleeping by herself, there is absolutely no opportunity for any preparation even of a less elaborate character than would be required for enacting Katie King. I prepare and arrange my library myself as the dark cabinet, and usually, after Miss Cook has been dining and conversing with us, and scarcely out of our sight for a minute, she walks direct into the cabinet, and I, at her request, lock its second door, and keep possession of the key all through the *séance;* the gas is then turned out, and Miss Cook is left in darkness.

On entering the cabinet Miss Cook lies down upon the floor, with her head on a pillow, and is soon entranced. During the photographic *séances,* Katie muffled her medium's head up in a shawl to prevent the light falling upon her face. I frequently drew the curtain on one side when Katie was standing near, and it was a common thing for the seven or eight of us in the laboratory to see Miss Cook and Katie at the same time, under the full blaze of the electric light. We did not on these occasions actually see the face of the medium because of the shawl, but we saw her hands and feet; we saw her move uneasily under the influence of the intense light, and we heard her moan occasionally. I have one photograph of the two together, but Katie is seated in front of Miss Cook's head.

During the time I have taken an active part in these *séances* Katie's confidence in me gradually grew, until she refused to give a *séance* unless I took charge of the arrangements. She said she always wanted me to keep close to her, and near the cabinet, and I found that after this confidence was established, and she was satisfied I would not break any promise I might make to her, the phenomena increased greatly in power, and tests were freely given that would have been unobtainable had I approached the subject in another manner. She often consulted me about persons present at the *séances,* and where they should be placed, for of late she had become very nervous, in consequence of certain ill-advised suggestions that force should be employed as an adjunct to more scientific modes of research.

One of the most interesting of the pictures is one in which I am standing by the side of Katie; she has her bare

foot upon a particular part of the floor. Afterwards I dressed Miss Cook like Katie, placed her and myself in exactly the same position, and we were photographed by the same cameras, placed exactly as in the other experiment, and illuminated by the same light. When these two pictures are placed over each other, the two photographs of myself coincide exactly as regards stature, &c., but Katie is half a head taller than Miss Cook, and looks a big woman in comparison with her. In the breadth of her face, in many of the pictures, she differs essentially in size from her medium, and the photographs show several other points of difference.

But photography is as inadequate to depict the perfect beauty of Katie's face, as words are powerless to describe her charms of manner. Photography may, indeed, give a map of her countenance; but how can it reproduce the brilliant purity of her complexion, or the ever-varying expression of her most mobile features, now overshadowed with sadness when relating some of the bitter experiences of her past life, now smiling with all the innocence of happy girlhood when she had collected my children round her, and was amusing them by recounting anecdotes of her adventures in India?

> "Round her she made an atmosphere of life;
> The very air seemed lighter from her eyes,
> They were so soft and beautiful, and rife
> With all we can imagine of the skies;
> Her overpowering presence make you feel
> It would not be be idolatry to kneel."

Having seen so much of Katie lately, when she has been illuminated by the electric light, I am enabled to add to the points of difference between her and her medium which I mentioned in a former article. I have the most absolute certainty that Miss Cook and Katie are two separate individuals so far as their bodies are concerned. Several little marks on Miss Cook's face are absent on Katie's. Miss Cook's hair is so dark a brown as almost to appear black; a lock of Katie's which is now before me, and which she allowed me to cut from her luxuriant tresses, having first traced it up to the scalp and satisfied myself that it actually grew there, is a rich golden auburn.

On one evening I timed Katie's pulse. It beat steadily at 75, whilst Miss Cook's pulse a little time after, was going at its usual rate of 90. On applying my ear to Katie's chest I could hear a heart beating rythmically inside, and pulsating even more steadily than did Miss Cook's heart when she allowed me to try a similar experiment after the *séance.*

Tested in the same way Katie's lungs were found to be sounder than her medium's, for at the time I tried my experiment Miss Cook was under medical treatment for a severe cough.

Your readers may be interested in having Mrs. Ross Church's, and your own accounts of the last appearance of Katie, supplemented by my own narrative, as far as I can publish it. When the time came for Katie to take her farewell I asked that she would let me see the last of her. Accordingly when she had called each of the company up to her and had spoken to them a few words in private, she gave some general directions for the future guidance and protection of Miss Cook. From these, which were taken down in shorthand, I quote the following: "Mr. Crookes has done very well throughout, and I leave Florrie with the greatest confidence in his hands, feeling perfectly sure he will not abuse the trust I place in him. He can act in any emergency better than I can myself, for he has more strength." Having concluded her directions, Katie invited me into the cabinet with her, and allowed me to remain there to the end.

After closing the curtain she conversed with me for some time, and then walked across the room to where Miss Cook was lying senseless on the floor. Stooping over her, Katie touched her, and said, "Wake up, Florrie, wake up! I must leave you now." Miss Cook then woke and tearfully entreated Katie to stay a little time longer. "My dear, I can't; my work is done. God bless you," Katie replied, and then continued speaking to Miss Cook. For several minutes the two were conversing with each other, till at last Miss Cook's tears prevented her speaking. Following Katie's instructions I then came forward to support Miss Cook, who was falling on to the floor, sobbing hysterically. I looked round, but the white-robed Katie had gone. As soon as Miss Cook was sufficiently calmed, a light was procured and I led her out of the cabinet.

The almost daily *séances* with which Miss Cook has lately favoured me have proved a severe tax upon her strength, and I wish to make the most public acknowledgment of the obligations I am under to her for her readiness to assist me in my experiments. Every test that I have proposed she has at once agreed to submit to with the utmost willingness; she is open and straightforward in speech, and I have never seen anything approaching the slightest symptom of a wish to deceive. Indeed, I do not believe she could carry on a deception if she were to try, and if she did she

would certainly be found out very quickly, for such a line of action is altogether foreign to her nature. And to imagine that an innocent school-girl of fifteen should be able to conceive and then successfully carry out for three years so gigantic an imposture as this, and in that time should submit to any test which might be imposed upon her, should bear the strictest scrutiny, should be willing to be searched at any time, either before or after a *séance*, and should meet with even better success in my own house than at that of her parents, knowing that she visited me with the express object of submitting to strict scientific tests,—to imagine, I say, the Katie King of the last three years to be the result of imposture does more violence to one's reason and common sense than to believe her to be what she herself affirms.

It would not be right for me to conclude this article without also thanking Mr. and Mrs. Cook for the great facilities they have given me to carry on these observations and experiments.

My thanks and those of all Spiritualists are also due to Mr. Charles Blackburn for the generous manner in which he has made it possible for Miss Cook to devote her whole time to the development of these manifestations and latterly to their scientific examination.

SITTINGS WITH D. D. HOME

Of all Crookes's output in psychical research these reports will be considered by many to stand out as his major contribution. The highlight of the *Researches* was a series of controlled experiments with results supported by figures, diagrams and calculations. Similar experiments are included in the reports presented here, but in general the conditions are open ended, the sitters awaiting developments and ready to observe whatever might eventuate. The latter approach may seem at first sight less scientific, but this may be because people tend to equate science with experimental procedures. There is however the alternative and no less valuable field of observational science, and this is the approach that seems best suited to examination of a powerful medium.

It must however be conceded that Crookes's reports are by no means all that could be wished. When Feilding, Baggally and Carrington investigated Eusapia Palladino in Naples in 19o8, they appreciated the need to describe exactly where each person sat or stood, where each hand or foot was placed, and who said or did what *from moment to moment.* Crookes, like most other researchers of his day and any other day, made no attempt at this sort of cinematic reproduction, but contented himself with reporting what he considered to be the salient features. He felt very strongly that his readers should give him some credit for not being completely foolish, and should take matters of elementary competence for granted without requiring detailed and repeated assurances about the strictness of the conditions.1 This was a serious misjudgment of human nature, for as time goes on critics become ever more willing to ascribe

[1] The same unfortunate attitude was taken by Professor Charles Richet and Dr. Gustave Geley in their crucial wax mould experiments with Franek Kluski—see *Revue Mitapsychique* 1921/1922.

to Crookes and others of his standing a degree of foolishness and incompetence that would have caused him amazement and indignation.

Until a few years ago a notebook kept by Crookes describing some séances of fairly sensational character lay in the archives of the Society for Psychical Research unnoticed. Dr. Medhurst brought it to light, as he did the interesting extract from *The Times* of 1872. The notebook is headed:

Copy of Ms. Notes by Mr. William Crookes F.R.S. of his séances with Mr. Daniel Dunglas Home in London from April 21st, 1870, to July 6th, 1871. Five intermediate séances and five following are published in the Proceedings of the Society for Psychical Research, Part [XV], *1889.*

The unpublished séances have rather more markedly spiritualistic content than those selected by Crookes for publication, but it seems unlikely that Crookes took the "spirit" messages at their face value.

The sittings published in the SPR *Proceedings*2 and those reproduced here for the first time from the SPR archives3 form a continuous series, and are presented, together with some other reports of sittings, in chronological order. The table set out on page 146 shows which sitting belongs to which group. The sitting of 31 May 1871 is not reproduced in full, as the shortened version has already appeared in the *Researches;* to see it again set against a background of messages, renderings of "Home, Sweet Home" and recitations from Lord Dunraven is rather like viewing through a wide-angle lens an action already seen in close-up.

The notes of sittings by the Rev W. Stainton Moses were unpublished until 1963/7, when they were presented in *Light*4 by Dr. Medhurst. Stainton Moses was a very powerful medium himself, and as he was, according to his own statement, to some. degree in trance during the sittings with Home, his accounts might well have been thought unreliable. However, in the case

2 "Notes of Séances with D. D. Home" By William Crookes, F.R.S., SPR Proc. Part XV, Dec. 1889.

3 All this material is reproduced by kind permission of the Society for Psychical Research.

4 "Stainton Moses and Contemporary Physical Medicines, 10. Daniel Douglas Home" *Light,* Summer 1965.

of the Home sittings independent accounts by Crookes of some of the most outstanding incidents also exist and are reproduced after the Moses accounts. There is a fair degree of consensus, and both of them have the same tendency to give the most casual descriptions of the most extraordinary occurrences. It is ironical, to say the least, that manifestations bearing witness to transcendental reality of some kind have their inescapably funny side; the phantom that (according to Lady Crookes) continued to play the accordion as it sank through the floor probably has pride of place, but the spirits who preferred to keep clear of England on Derby day are also rather endearing!

Those who seek to explain away Home with facile theories should try to test their views against particular incidents. For example, Crookes describes the unsuccessful attempt of a pencil to write a message (untouched by the human hand) on a sheet of paper; though a small piece of wood obligingly advances to help out, the message remains unwritten—and the experiment is considered to be a *failure.* Was that due to malobservation? Wishful thinking? Fraud? Was the whole Home complex a deception, the plotters including the respectable lawyer, Serjeant Cox, the irreproachable clergyman, Moses, an array of Fellows of the Royal Society, and Crookes, together with several members of his family? Yet none of the plotters ever treated himself to that ultimate joy of revelation without which a hoax never leaves the ground.

The final item[3] in this part is Crookes's address to a meeting of the Society for Psychical Research in 1894, in which he makes it clear that twenty years' retirement from the active field has n no way diminished his conviction that a world in which D. D. Home had existed was not at all what it seemed to his scientific colleagues.

VI.

NOTES OF SÉANCES WITH D. D. HOME.

By William Crookes, F.R.S.

In the year 1874 I published in a collected form various papers, dating from 1870 to 1874, describing inquiries made by myself, alone or with other observers, into the phenomena called Spiritual. In a paper reprinted from the *Quarterly Journal of Science*, for January, 1874, I announced my intention of publishing a book, which should contain my numerous printed and unprinted observations.

But this projected work has never seen the light. My excuse,—a real excuse, though not a complete justification,—lies in the extreme pressure of other work on my time and energies. The chemical and physical problems of my professional life have become more and more absorbing; and, on the other hand, few fresh opportunities have occurred of prosecuting my researches into "psychic force." I must confess, indeed, that I have been disappointed with the progress of investigation into this subject during the last fifteen years. I see little abatement of the credulity on the one hand and the fraud on the other which have all along interfered, as I hold, with the recognition of new truth of profound interest.

The foundation of the Society for Psychical Research has, however, somewhat altered the situation. We have here a body of inquirers of whom the more prominent, so far as I can judge, are quite sufficiently critical in their handling of any evidence making for extraordinary phenomena, while they bring to the task that patience and diligence without which an investigation of this sort is doomed to failure. Invited to contribute to the Society for Psychical Research *Proceedings*, some of my notes on séances with D. D. Home, I feel I ought not to decline. I am not satisfied with these notes; which form, so to say, only a few bricks for an intended edifice it is not now probable I shall ever build. But, at least, they are accurate transcripts of facts which I still hold to be of deep importance to science. Their publication will, at any rate, show that I have not changed my mind; that on dispassionate review of statements put forth by me nearly twenty years ago I find nothing to retract or to alter. I have discovered no flaw in the experiments then made, or in the reasoning I based upon them.

I am too well aware there have been many exposures of fraud on the part of mediums; and that some members of the Society for Psychical Research have shown the possibility of fraud under circum

stances where Spiritualists had too readily assumed it was not possible. I am not surprised at the evidence of fraud. I have myself frequently detected fraud of various kinds, and I have always made it a rule in weighing Spiritualistic evidence to assume that fraud may have been attempted, and ingeniously attempted, either by seen or unseen agents. I was on my guard even in D. D. Home's case, although I am bound to say that with him I never detected any trickery or deceit whatever, nor heard any first-hand evidence of such from other persons. At the same time, I should never demand that anyone should consider Home, or any other medium, as "incapable of fraud," nor should I pin my faith upon any experiment of my own or others which fraud could explain. The evidence for the genuineness of the phenomena obtained by Home in my presence seems to me to be strengthened rather than weakened by the discussions on conjuring, and the exposures of fraud which have since taken place. The object of such discussions is to transform *vague* possibilities of illusion and deception into *definite* possibilities; so far as this has yet been done, it has, I think, been made more clear that certain of Home's phenomena fall quite outside the category of marvels producible by sleight of hand or prepared apparatus.

But I must not be supposed to assert that all, or even most of, the phenomena recorded by me were such as no juggling could simulate. Many incidents,—as slight movements of the table, &c.,—were obviously and easily producible by Home's hands or feet. Such movements, &c., I have recorded,—not as in themselves proving anything strange,—but simply as forming part of a series of phenomena, some of which *do* prove, to my mind, the operation of that "new force" in whose existence I still firmly believe. Had I described these *séances* with a view to sensational effect, I should have omitted all the non-evidential phenomena, and thus have brought the marvels out in stronger relief. Such was not my object. In most cases the notes were written—primarily for my own information,—while the phenomena were actually going forward, but on some few occasions they were copied or expanded immediately after the séance from briefer notes taken at the time. They are here reprinted *verbatim;* and the petty details which render them tedious to read will supply the reader with all the material now available for detecting the imposture, if any, which my friends and I at the time were unable to discover.[1]

My object in publishing these notes will have been attained if they should aid in inducing competent observers, in this or other countries, to repeat similar experiments with accurate care, and in a dispassionate

[1] The notes here published are accounts of selected séances, but in each case selected, the full account of the séance is given.

spirit. Most assuredly, so far as my knowledge of science goes, there is absolutely no reason *à priori* to deny the possibility of such phenomena as I have described. Those who assume—as is assumed by some popular writers—that we are now acquainted with all, or nearly all, or even with any assignable proportion, of the forces at work in the universe, show a limitation of conception which ought to be impossible in an age when the widening of the circle of our definite knowledge does but reveal the proportionately widening circle of our blank, absolute, indubitable ignorance.

(I.) Wednesday, May 9th, 1871.—Sitting at 81, South Audley-street, (Miss Douglas's house). From 9 to 11 p.m.

Present :—Mr. D. D. Home (medium), Miss Douglas, Mrs. Gregory, Mr. O. R., Mr. W. F., Mrs. W. F., Mr. Crookes.

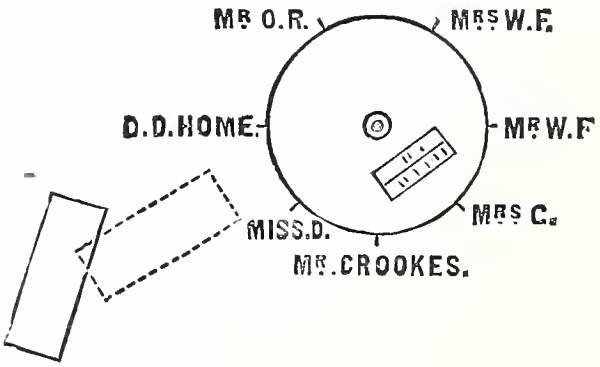
In the front drawing-room, at a loo table on centre pillar and three feet, diameter three feet, weight 32lb., cloth on (occasionally turned up to give light below).

One candle on table, two on mantelpiece, one on side table. Towards end of sitting (during the fire test) the candle on the table and one on the mantelpiece were put out. The others were alight the whole time. An accordion was on the table.

A wood fire, somewhat dull, in the grate.

Temperature very comfortable all the evening.

Order of sitting :



A small sofa table stood about two feet from Miss Douglas and Mr. Home in the position shown in diagram. Miss Douglas commenced by reading aloud a few extracts from Robert Chambers's introduction to Mr. Home's book, *Incidents of my Life.*

Phenomena.—The table tilted several times in four or five directions at an angle of about 25deg., and kept inclined sufficiently long for those who wished to look under with a candle and examine how the hands of Mr. Home and the others present were touching it. Sometimes it stood on two legs, and sometimes it was balanced on one. I, who had brought a spring balance in my pocket, was now invited by Mr. Home to try an experiment in the alteration of weight.

As it would have been inconvenient without disturbing the sitting to have experimented on the total weight of the table, the balance was hooked under one edge of the table, and the force required to tilt it measured.

Experiment 1.—"Be light." An upward pull of 2lb. required to lift one of the feet off the ground, all hands lightly touching the top of the table.

Experiment 2.—"Be heavy." As soon as this was said, the table creaked, shuddered, and appeared to settle itself firmly into the floor. The effect was as if the power of a gigantic electro-magnet had been suddenly turned on, the table constituting the armature. All hands were, as before, very lightly touching the upper surface of the table with their fingers. A force of 36lb. was now required to raise the foot of the table from the floor. I lifted it up and down four or five times, and the index of the balance kept pretty constant at 36lb., not varying more than ½lb. Whilst this was going on, each person's hands were noticed. They were touching the table so lightly that their aggregate downward pressure could not have been many ounces. Mr. Home once lifted his hands for a moment quite off the table. His feet were tucked back under his chair the whole time.

Experiment 3.—"Be light." Conditions the same as before. An upward pull of 7lb. required to tilt the table.

Experiment 4.—"Be heavy." The same creaking noise as in Experiment 2 was again heard. Every person (except Mr. O. R. and myself, who was standing up trying the experiment) put the ends of the fingers *underneath* the table top, the palms being upwards and the thumbs visible, so that, if any force were unconsciously exerted, it should tend to diminish the weight. At the same time Mr. O. R. took a candle and stooped under the table to see that no one was touching the legs of the table with their knees or feet. I also stooped down occasionally to verify Mr. O. R.'s statement that all was fair beneath. Upon applying the spring balance, I saw that the table was pulled up at 45lb. Immediately this was announced I felt an increase of weight, and, after a few trials, the pull was increased to 48lb., at which point the index stood steady, the leg of the table being about 3in. off the floor.

Experiment 5.—"Be heavy." The conditions were the same as before, a little more care being taken by the sitters to keep their feet well tucked under their chairs. Hands touching the under side of the table top as before. The index of the balance rose steadily, without the table moving in the least, until it pointed to 46lb. At this point the table rose an inch, when the hook of the balance slipped off, and the table returned to its place with a crash. The iron hook had bent out sufficiently to prevent it holding the table firmly any longer, so the experiments were obliged to be discontinued.

(After the séance was over, the normal weight of the table was taken. Its total weight was 32lb. In order to tilt it in the manner described in the experiments a pull of 8lb. was required. When lifted straight up at three equi-distant points, the spring-balance being at one point, a pull of 10lb. was required. The accuracy of the balance could be depended on to about ¼lb., not more.)

Raps were heard from different parts of the table and the floor, and the table quivered rapidly several times.

Mr. Home appeared slightly convulsed about the arms and body. Suddenly he said aloud, "Robert Chambers is here; I feel him." Three loud raps were immediately heard from the small sofa table about two feet behind Miss Douglas, and this table then slowly glided up to within five inches of Miss Douglas and Mr. Home. The movement was very steady and noiseless, and occupied about five seconds in going the distance of 20 inches. When it stopped, Mr. Home drew attention to the fact that both his feet were under his chair and all hands were on the table. He moved a little nearer to Mr. O. R. and turned his legs and feet as far away from the table as he could, asking the sitters to make themselves quite certain that he could not have produced the movement of the table. While this was being noticed, the small table again moved, this time slowly and a quarter of an inch at a time, until it was again close to Mr. Home and Miss Douglas.

A flower in a glass standing in the centre of the small table was moved, but not taken out of the glass.

Mr. Home and then Miss Douglas said they felt touched under the table. The sleeve of Miss Douglas's dress was pulled up and down several times in full view of all present. Mr. Home said he saw a hand doing it. No one else saw this; but Miss Douglas felt a hand, which, however, was invisible, put on her wrist immediately after.

Mr. Home held the accordion under the table by one hand, letting the keyed end hang downwards. Presently it commenced to sound, and then played "Ye Banks and Braes," &c., and other airs, and imitated an echo very beautifully. Whilst it was playing in Mr. Home's hand (his other hand being quietly on the table) the other gentlemen looked under the table to see what was going on. I took particular notice that, when the instrument was playing, Mr. Home held it lightly at the end opposite the keys, that Mr. Home's feet had boots on and were both quiet at some distance from the instrument, and that, although the keyed end was rising and falling vigorously and the keys moving as the music required, no hand, strings, wires, or anything else could be seen touching that end.

Mr. O. R. then held the accordion by the plain end, Mr. Home touching it at the same time. Presently it began to move and then commenced to play. Mr. Home then moved his hand away and the instrument continued playing for a short time in Mr. O. R.'s hand, both of Mr. Home's hands being then above the table.

Some questions were then asked and answers were given by raps and notes on the accordion. The alphabet being called for by five raps, the following message was spelled out:—"It is a glorious truth. It was the solace of my earth life and the triumph over the change called death. Robert Chambers."

A private message to Miss Douglas was given in the same manner.

The table was then tilted several times as before, and once rose completely off the ground to a height of about three inches.

Mr. Home sank back in his chair with his eyes closed and remained still for a few minutes. He then rose up in a trance and made signs for his eyes to be blindfolded. This was done. He walked about the room in an undecided sort of manner, came up to each of the sitters and made some remark to them. He went to the candle on a side table (close to

the large table) and passed his fingers backwards and forwards through the flame several times so slowly that they must have been severely burnt under ordinary circumstances. He then held his fingers up, smiled and nodded as if pleased, took up a fine cambric handkerchief belonging to Miss Douglas, folded it up on his right hand and went to the fire. Here he threw off the bandage from his eyes and by means of the tongs lifted a piece of red hot charcoal from the centre and deposited it on the folded cambric; bringing it across the room, he told us to put out the candle which was on the table, knelt down close to Mrs. W. F. and spoke to her about it in a low voice. Occasionally he fanned the coal to a white heat with his breath. Coming a little further round the room, he spoke to Miss Douglas saying, "We shall have to burn a very small hole in the handkerchief. We have a reason for this which you do not see." Presently he took the coal back to the fire and handed the handkerchief to Miss Douglas. A small hole about half an inch in diameter was burnt in the centre, and there were two small points near it, but it was not even singed anywhere else. (I took the handkerchief away with me and on testing it in my laboratory, found that it had not undergone the slightest chemical preparation which could have rendered it fire-proof.)

Mr. Home again went to the fire, and after stirring the hot coal about with his hand, took out a red-hot piece nearly as big as an orange, and putting it on his right hand, covered it over with his left hand so as to almost completely enclose it, and then blew into the small furnace thus extemporised until the lump of charcoal was nearly white-hot, and then drew my attention to the lambent flame which was flickering over the coal and licking round his fingers; he fell on his knees, looked up in a reverent manner, held up the coal in front and said: "Is not God good? Are not His laws wonderful?"

Going again to the fire, he took out another hot coal with his hand and holding it up said to me, "Is not that a beautiful large bit, William? We want to bring that to you. Pay no attention at present." The coal, however, was not brought. Mr. Home said: "The power is going," and soon came back to his chair and woke up.

Mr. O. R. left at 11 o'clock. After this, nothing particular took place.

The following refers to a somewhat similar incident:—

Extract from a letter from Mr. Crookes to Mrs. Honeywood, describing an incident at a Séance on April 28th, and incorporated in Mrs. Honeywood's notes of the Séance.

At Mr. Home's request, whilst he was entranced, I went with him to the fireplace in the back drawing-room. He said, "We want you to notice particularly what Dan is doing." Accordingly I stood close to the fire and stooped down to it when he put his hands in. He very deliberately pulled the lumps of hot coal off, one at a time, with his right hand and touched one which was bright red. He then said, "The power is not strong on Dan's hand, as we have been influencing the handkerchief most. It is more difficult to influence an inanimate body like that than living flesh, so, as the circumstances were favourable, we thought we would show you that we

could prevent a red-hot coal from burning a handkerchief. We will collect more power on the handkerchief and repeat it before you. Now!"

Mr. Home then waved the handkerchief about in the air two or three times, held it up above his head and then folded it up and laid it on his hand like a cushion: putting his other hand into the fire, took out a large lump of cinder red-hot at the lower part and placed the red part on the handkerchief. Under ordinary circumstances it would have been in a blaze. In about half a minute, he took it off the handkerchief with his hand, saying, "As the power is not strong, if we leave the coal longer it will burn." He then put it on his hand and brought it to the table in the front room, where all but myself had remained seated.

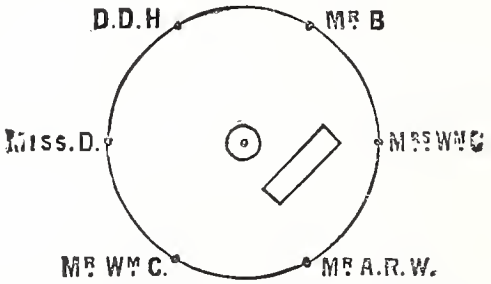
(Signed) WILLIAM CROOKES.

(II.) MONDAY, MAY 22nd, 1871.—Sitting at 81, South Audley-street, the residence of Miss Douglas. From 9.45 to 11 p.m.

Present:—Mr. D. D. Home (medium), Miss Douglas, Mr. B., Mr. Alfred Russel Wallace, Mrs. Wm. Crookes, Mr. Wm. Crookes.

In the front drawing-room, at a loo table, supported on centre pillar and three feet. Lighted with candles the whole of the evening.

Order of sitting:—



The small sofa table, mentioned in the account of the last séance at this house, was about two feet behind Miss Douglas. An accordion belonging to me was on the table, and a small candlestick and candle.

Phenomena.—In a few minutes a slight tremor of the table was felt. Mr. A. R. Wallace was touched. Then Mrs. Crookes felt her knee touched and her dress pulled. Miss Douglas's dress was pulled, and I was touched on my right knee as by a heavy hand firmly placed on it.

The table tilted up on two and sometimes on one leg several times, rising at the side opposite each person successively, whilst all who wished took the candle and examined underneath to see that no one of the party was doing it with the feet. Granting that Mr. Home might have been able, if he so desired, to influence mechanically the movement of the table, it is evident that he could only have done so in two directions, but here the table moved successively in six directions.

The table now rose completely off the ground several times, whilst the gentlemen present took a candle, and kneeling down, deliberately examined the position of Mr. Home's feet and knees, and saw the three feet of the table quite off the ground. This was repeated, until each observer expressed himself satisfied that the levitation was not produced by mechanical means on the part of the medium or any one else present.

The alphabet was now called for by five raps. The letters given out were taken down :—

"We igh—"

Thinking this the commencement of a sentence we tried to get the next letter, but no response was given. Then we said that some letter had been given wrong. One thump said emphatically, "No." We then said, "We have got the first word 'We' all right, but we want the second word." "Is *i* right?" "Yes." "Is *g* right?" "Yes." "Is *h* right?" "Yes."

After thinking for a moment it suddenly occurred to us that the word was "Weigh," and that it referred to an experiment I had come prepared to repeat—that of measuring the variation in weight of the table by means of a spring balance.

A perfect shower of raps showed that this interpretation was the correct one.

I accordingly repeated the experiments which were tried at the last sitting at this house, using a stronger spring balance.

Experiment 1.—"Be light." The table tilted, when the balance showed a weight of scarcely half a pound.

Experiment 2.—"Be heavy." The table now bore a pull of 20lb. before it tilted up on one side, all hands being placed under the top edge of the table, thumbs visible.

Experiment 3.—I now asked if the opposing force could be so applied as to cause the table to rise up off the ground quite horizontally when I was pulling. Immediately the table rose up completely off the ground, the top keeping quite horizontal, and the spring balance showing a pull of 23lb. During this experiment Mr. Home's hands were put *on* the table, the others being under as at first.

Experiment 4.—"Be heavy." All hands beneath the table top. It required a pull of 43lb. to lift the table from the floor this time.

Experiment 5.—"Be heavy." This time Mr. B. took a lighted candle and looked under the table to assure himself that the additional weight was not produced by anyone's feet or otherwise. Whilst he was there observing I tried with the balance and found that a pull of 27lb. was required to lift the table up. Mr. Home, Mr. A. R. Wallace, and the two ladies had their fingers fairly under the top of the table, and Mr. B. said that no one was touching the table beneath to cause the increase of weight.

When these experiments were finished we all sat quietly round the table for a few minutes, when suddenly the small sofa-table came up to within about six inches of Miss Douglas. It glided along with a quick, steady movement. It did not move again after it stopped the first time.

(Just before I sat down to the séance, remembering that this table had moved up to the circle apparently of its own accord the last time we had a séance here, I pushed the table a little away from its usual place, putting it just about two feet behind Miss Douglas's chair.

I took notice then that there was no string or anything else attached to it. After I had so placed it no one else went near it, so that its movement on this occasion was entirely beyond suspicion.)

Miss Douglas's chair moved partly round. On attempting to replace it as

before she said she could not move it, as it was firmly fixed to the floor. I attempted to pull it along, but it resisted all my efforts.

Mr. Home's chair then moved several times, and tilted up on two legs, whilst Mr. Home's feet were up in the chair in a semi-kneeling posture, and his hands before him not touching anything.

The table cloth in front of Mr. Home just at the edge of the table was bulged outwards as if a hand were beneath it, and we then saw a movement of the cloth as if fingers were moving under it.

Mr. Home then took the accordion in one hand in his usual manner, and held it beneath the table. At first chords were sounded, and then a very beautiful piece with bass and treble was played. Each of the gentlemen in turn looked at the accordion under the table whilst it was playing.

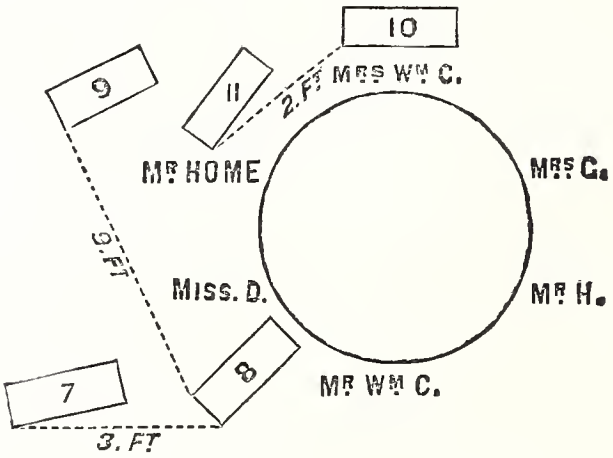
Mr. A. R. Wallace then asked for "Home, sweet Home." A few bars of this air were immediately sounded. He looked under the table and said he saw a hand distinctly moving the instrument up and down, and playing on the keys. Mr. Home had one hand on the table and was holding the top end of the accordion, whilst Mr. A. R. Wallace saw this hand at the bottom end where the keys were.

(III.) Monday, June 19th, 1871.—Sitting at 81, South Audley-street. From 9 to 11 p.m.

Present:—Mr. D. D. Home (medium), Miss Douglas, Mrs. Gregory, Mrs. Wm. Crookes, Mr. Wm. Crookes, Mr. H.

In the front drawing-room at the small round table three feet in diameter

Order of sitting, &c.:—



7.—Original position of small table.

8.—Position where table (7) was first taken to.

9.— ,, ,, ,, next ,,

10.—Small table behind Mrs. Wm. Crookes.

11.—Position where table (10) was taken to.

Just before sitting down, remembering that the table (7) had been moved on the last occasion, I went to it and pushed it into the furthest corner of the room.

After sitting for some little time we had raps, and movements of the

table. I asked if I might weigh the table when Mr. Home was not touching it at all.—"Yes."

Experiment 1.—I thereupon fixed the spring balance to it, and asking for it to be made heavy tried to lift it off the ground. It required a pull of 23lb. to raise it. During this time Mr. Home was sitting back in his chair, his hands quite off the table and his feet touching those on each side of him.

Experiment 2.—"Be heavy" again. Mr. H. now took a candle, and stooping down looked under the table to see that no one was touching it there, whilst I was observing the same at the top. Mr. Home's hands and feet were the same as before. The balance now showed a tension of 22lb.

Experiment 3 was now tried, Mr. Home being further from the table. A pull of 17lb. was required.

Experiment 4.—When we said "Be light," the table rose at 12lb. On trying afterwards the normal pull required to tilt it, we found it to be 14lb.

It was now proposed to put out the candles and sit by the light coming in from the windows, which was quite sufficient to enable us to see each other, and the principal articles of furniture in the room.

We presently heard a noise in the back drawing-room as if a man had got off the couch and was coming to us. Mrs. Wm. Crookes said it came up to her, and she then felt a pair of large hands on her head, then on her shoulders and on her back. Her chair was then moved partly round towards Mrs. Gregory away from Mr. Home.

A noise and crash as of something falling was now heard behind Mrs. Wm. Crookes's chair, and the small table (10) was pressed up close to her. Her chair was tilted up till she was jammed between the back of the chair and the table we were sitting round, and her chair resisted all her efforts to press it down.

Raps came, and a message to get a light.

On lighting the candle it was seen that the noise had been caused by a picture which had been on the table resting against the wall, falling down on to the floor. It was uninjured. The table (10) had been moved up close to Mrs. Wm. Crookes, between her and Mr. Home.

Mr. Home then took the accordion in his right hand in the usual manner, and placing his left on the table it was held both by Miss Douglas and Mrs. Wm. Crookes. The light was then put out, and the following message was spelt:—

"The Four Seasons. Winter first."
"Spring.—The Birth of the Flowers."
"Birds in Summer."

The above messages were given whilst the piece was being played. It would be impossible to give any idea of the beauty of the music, or its expressive character. During the part typifying summer we had a beautiful accompaniment, the chirping and singing of the birds being heard along with the accordion. During autumn, we had "The Last Rose of Summer" played.

Home said that the spirit playing was a stranger to him. It was a high and very powerful one, and was a female who had died young.

Mrs. Wm. Crookes said: "Is it my cousin M—— ? It has flashed into my mind that it is she."

Answer by raps: "Yes."

We then heard a rustling noise on a heliotrope which was growing in a flower-pot standing on the table between Mr. Home and Mrs. Wm. Crookes. On looking round Mrs. Wm. Crookes saw what appeared to be a luminous cloud on the plant. (Mr. Home said it was a hand.) We then heard the crackling as of a sprig being broken off, and then a message came:—

"Four Ellen."

Immediately the white luminous cloud was seen to travel from the heliotrope to Mrs. Wm. C.'s hand, and a small sprig of the plant was put into it. She had her hand then patted by a delicate female hand. She could not see the hand itself, but only a halo of luminous vapour over her hand.

The table (7) was now heard to be moving, and it was seen to glide slowly up to the side of Miss Douglas, to the position marked (8), about three feet. Miss Douglas cried out, "Oh! Oh! How very curious! I have had something carried round my neck. It is now put into my hand. It is a piece of heath." A message came:—

"In Memoriam."

Mr. Home said, "Count the number of flowers on the sprig. There is a meaning in all this." Eleven were counted. (Mr. Robert Chambers had eleven children.)

The candle (which had been lighted to ascertain this) was again put out. Mr. Home took the accordion in his right hand, whilst his other hand was held by Miss Douglas and Mrs. Wm. Crookes. The others present also joined hands. The accordion played, and we then saw something white move from the table close to Miss Douglas, pass behind her and Mr. Home, and come into the circle between him and Mrs. Wm. Crookes. It floated about for half a minute, keeping a foot above the table. It touched Mrs. Wm. Crookes, then went round near to the others as if floating about with a circular movement. It presently settled on the backs of Miss Douglas's, Mr. Home's, and Mrs. Wm. Crookes's hands, which were grasped together. The message was given:—

"Light, and look,"

and we then saw that the floating object had been a china card plate with cards in it, which had previously been on the table behind Miss Douglas.

The light was again put out, and we then heard a sticking and scraping along the floor, and then a heavy bump against the door. Very loud raps were then heard on the table and in other parts of the room. Movements of the table were felt, and then all was quiet. We lighted the candle and saw that the small table which had already moved up to Miss Douglas, had travelled right across the room, a distance of nine feet, and, thumping against the door, had produced the noise we had all heard.

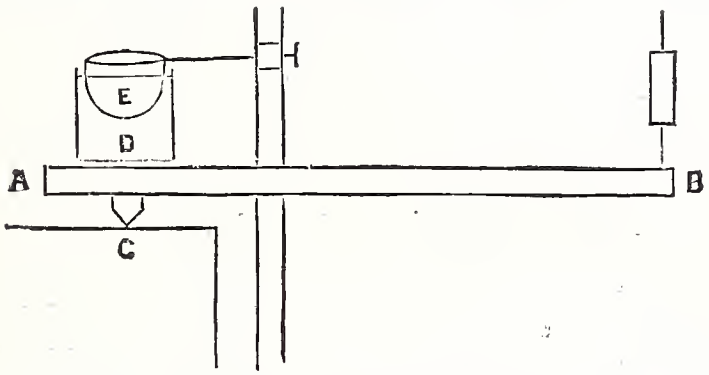
Nothing else took place after this.

(IV.) Wednesday, June 21st, 1871.—Sitting at 20, Mornington-road (private residence of Mr. Crookes). From 8.40 to 10.30 p.m.

Present:—Mr. D. D. Home (medium), Mrs. Wr. Crookes, Mr. Wr. Crookes, Mrs. Humphrey, Mr. C. Gimingham, Mr. Serjt. Cox, Mr. Wm. Crookes, Mrs. Wm. Crookes, Miss A. Crookes.

In the dining-room lighted by one gas burner. Round the dining table without a leaf in it.

On the table was an accordion belonging to myself; a long thin wooden lath; a pencil and some paper; and by the side, partly resting on the table, was an apparatus for testing alteration in the weight of a body. It consisted of a



mahogany board, A B, 36 inches long, 9 inches wide, and 1 inch thick, supported at the end B by a spring balance, and resting at C on the flat stand by means of a wooden fulcrum cut to a knife edge and 3 inches from the end A. D is a glass bowl of water, standing on the board in such a manner that its weight partly fell between the fulcrum C and the end B, producing with the weight of the board a tension of 5lb. on the spring balance. E is a hemispherical copper vessel, perforated at the bottom and firmly supported on a massive iron stand rising from the floor. E was so arranged that it dipped into water in D, but was 2 inches from D all round the circumference, and $5\frac{1}{2}$ inches from the bottom. It was sufficiently firmly supported to prevent any knocking or pushing to which it might be subjected from being communicated to the glass vessel D and thence to the board and spring balance. I and my assistant had well tested it in this respect beforehand.[1]

Under the table was the wire cage described previously,[2] and three Groves cells were in connection with the surrounding wire. A commutator in the circuit prevented a current circulating till I pressed down a key.

Phenomena.—Almost immediately very strong vibrations of the table were felt. Answers to questions "Yes" and "No" were given by these vibrations.

Mr. Home's hands were contracted in a very curious and painful looking manner. He then got up and gently placed the fingers of his right hand in the copper vessel E, carefully avoiding coming near any other part of the apparatus. Mrs. Wm. Crookes, who was sitting near the apparatus, saw the end B of the board gently descend and then rise again. On referring to the automatic register it showed that an increased tension of 10 ounces had been produced.

Nothing more took place.

[1] Compare *Quarterly Journal of Science* for October, 1871.

[2] See *Quarterly Journal of Science* for July, 1871.

(V.) WEDNESDAY, JUNE 21st, 1871.—Sitting at 20, Mornington-road. From 10.45 to 11.45. (This séance was held shortly after the previous one. We all got up, moved about, opened the windows, and changed our positions. Miss A. Crookes then left, and we proposed sitting down again.)

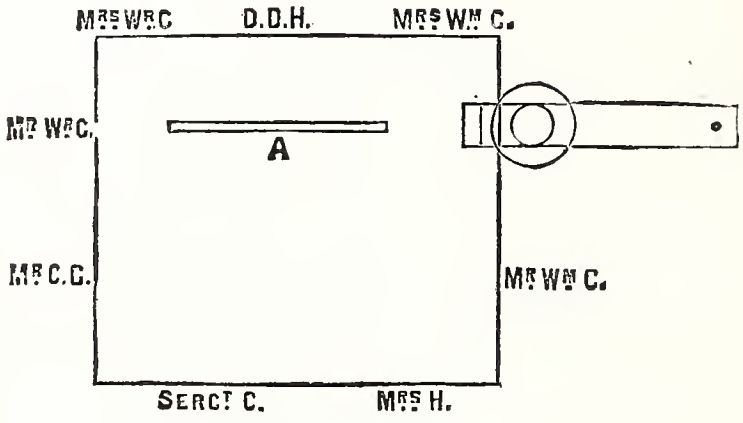
Present:—Mr. D. D. Home (medium), Mrs. Wr. Crookes, Mr. Wr. Crookes, Mrs. Humphrey, Mr. C. Gimingham, Mr. Serjt. Cox, Mr. Wm. Crookes, Mrs. Wm. Crookes.

In the dining-room. The table and apparatus the same as before.

The light was diminished, but there was still light enough to enable us to distinguish each other plainly and see every movement. The apparatus was also distinctly visible.

The automatic register was pushed up close to the index of the balance.

We sat in the following order :—



A was a lath already mentioned.[1]

Almost immediately a message came, "Hands off." After sitting quiet for a minute or two, all holding hands, we heard loud raps on the table; then on the floor by the weight apparatus. The apparatus was then moved and the spring balance was heard to move about strongly. We then had the following message :—

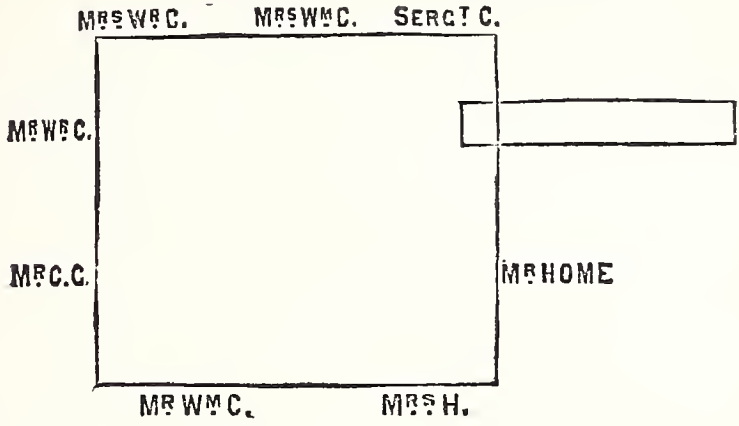
"Weight altered a little. Look."

I then got up and looked at the register. It had descended to 14lb., showing an additional tension of (14—5=) 9lb.

As this result had been obtained when there was scarcely light enough to see the board and index move, I asked for it to be repeated when there was more light. The gas was turned up and we sat as before. Presently the board was seen to move up and down (Mr. Home being some distance off and not touching the table, his hands being held), and the index was seen to descend to 7lb., where the register stopped. This showed a tension of 7—5=2lb.

[1] See Séance IV.

Mr. Home now told us to alter our position. We now sat as follows :—



A message was given :—

"All hands except Dan's off the table."

Mr. Home thereupon moved his chair to the extreme corner of the table and turned his feet quite away from the apparatus close to Mrs. H. Loud raps were heard on the table and then on the mahogany board, and the latter was shaken rather strongly up and down. The following message was then given :—

"We have now done our utmost."

On going to the spring balance it was seen by the register to have descended to 9lb , showing an increase of tension of (9—5=) 4lb.

The apparatus was now removed away from the table, and we returned to our old places (see first diagram).

We sat still for a few minutes, when a message came :—

"Hands off the table, and all joined."

We therefore sat as directed.

Just in front of Mr. Home and on the table, in about the position shown at A on the first diagram, was a thin wooden lath $23\frac{1}{4}$ inches long, $1\frac{1}{2}$ inch wide, and $\frac{3}{8}$ inch thick, covered with white paper. It was plainly visible to all, and was one foot from the edge of the table.

Presently the end of this lath, pointing towards Mr. Wr. Crookes, rose up in the air to the height of about 10 inches. The other end then rose up to a height of about five inches, and the lath then floated about for more than a minute in this position, suspended in the air, with no visible means of support. It moved sideways and waved gently up and down, just like a piece of wood on the top of small waves of the sea. The lower end then gently sank till it touched the table and the other end then followed.

Whilst we were all speaking about this wonderful exhibition of force the lath began to move again, and rising up as it did at first, it waved about in a somewhat similar manner. The startling novelty of this movement having now worn off, we were all enabled to follow its motions with more accuracy. Mr. Home was sitting away from the table at least three feet from the lath all this time ; he was apparently quite motionless, and his hands were

tightly grasped, his right by Mrs. Wr. Crookes and his left by Mrs. Wm. Crookes. Any movement by his feet was impossible, as, owing to the large cage being under the table, his legs were not able to be put beneath, but were visible to those on each side of him. All the others had hold of hands. As soon as this was over the following message was given :—

"We have to go now ; but before going we thank you for your patience. Mary sends love to aunt, and will play another time."

The séance then broke up at a quarter to twelve.

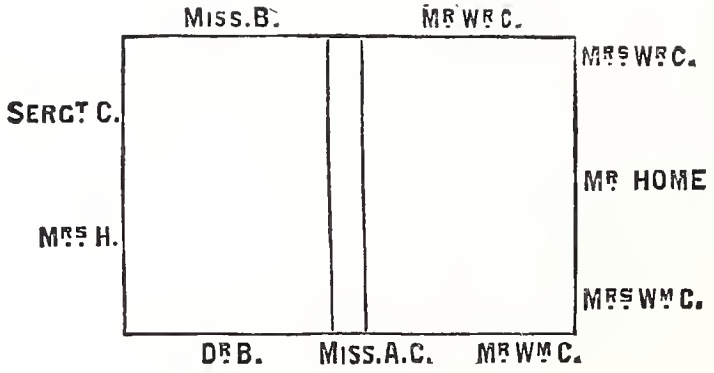
(VI.) Friday, June 23rd, 1871. Sitting at 20, Mornington-road. From 8.30 to 11 p.m.

Present :—Mr. D. D. Home (medium), Mrs. Wr. Crookes, Mr. Wr. Crookes, Miss Bird, Serjt. Cox, Mrs. Humphrey, Dr. Bird, Miss A. Crookes, Mr. Wm. Crookes, Mrs. Wm. Crookes.

In the dining-room ; lighted sometimes by one gas burner, sometimes by salted spirit lamp, sometimes by light from street.

The dining-table had no flap in it, but was slightly opened in the centre (about four inches). On the table were the accordion, a small hand bell, lath, paper, pencil, phosphorus half under water, and a spirit lamp with a salted wick.

Order of sitting :—



The cloth was on the table all this time.

At first we sat with one gas burner alight.

After sitting for about 10 minutes the table vibrated strongly, and gave a definite number of vibrations at our request on two or three occasions. It felt like a strong, quick shudder passing through it.

Mr. Home now took the accordion in the usual manner and held it under the table. It was presently sounded and notes played. During this time Miss Bird and Dr. Bird got under the table and saw the movement. The gas was now put out and the spirit lamp lighted. The yellow flame made everything look very ghastly and quite took the colour out of Mrs. Wm. Crookes's coral ornaments. She took off her coral necklace, and laid it on the table cloth, just over the opening in the table by the spirit lamp. In a short

time something poked up the cloth and moved the corals, repeating the movement two or three times.[1]

Mr. Home then put the accordion on the floor, and placed both his hands on the table. In a short time we all heard a movement of the accordion under the table, and accordingly Mr. Home placed one hand in Mrs. Wm. Crookes's hands, the other in Mrs. Wr. Crookes's hands, and placed both his feet beneath my feet. In this manner it was physically impossible for him to have touched the accordion with hands or feet. The lamp also gave plenty of light to allow all present seeing any movement on his part. The accordion now commenced to sound, and then played several notes and bars. Every one present expressed themselves quite convinced that this result could not possibly have been effected by Mr. Home's agency.

Mr. Wr. Crookes now said that the accordion was brought up to his knees and pressed against them. He put his hand down and took it by the handle. It then played in his hand, Mr. Home's hands and feet being held by others as before. Presently Mr. Wr. Crookes said that the accordion had left his hand (which he then put on to the table). We could hear it moving about under the table, and then it pressed up against my knees, and on putting my hand down I felt the handle turned into my hand. I held it for a minute but it did not play. I then gave it to Mr. Home, and it then played in his right hand a tune which Serjt. Cox had asked for, "Ye Banks and Braes," &c.

After this a very beautiful piece of music was played. It was remarked, "This must be the music of the spheres." A message was given :—

"This is."

After a little time the music stopped and we turned the light lower, but still

[1] Miss Bird writes :—

I remember the circumstances stated in this séance. I had noticed that the necklace worn by Mrs. Wm. Crookes looked green. I asked her why her beads were green. She assured me they were her corals, and to convince me the necklace was passed into my hands. Instead of passing the necklace back I simply put it opposite me in the middle of the table. Almost as soon as I had placed the necklace it rose in a spiral shape. I called out eagerly to my brother, Dr. Bird, to look at the extraordinary conduct of the threaded corals, and whilst I was endeavouring to get his attention the erect necklace quietly subsided in a coil on the table. I have often recalled the incident, and although a sceptic by instinct, this one strange experience has made it impossible for me to doubt the assertions of others whose judgment is clear and whose uprightness is above suspicion.

October. 1889. ALICE L. BIRD.

To this Dr. Bird adds :—

I recollect my sister calling out to me, "Look, look, at the necklace," but at that moment my attention was directed elsewhere, and I did not actually see the phenomenon in question. GEORGE BIRD.

At the moment this occurred I was writing my notes and only caught sight of the necklace as it was settling down from its first movement. It made one or two slight movements afterwards, and, as I state, it seemed to me as if it had been moved from below. I mentioned this at the time and was then told by Miss Bird and others that the necklace had behaved as is now described by her. Not having seen it myself I did not alter the statement in my note-book. W. CROOKES.

keeping enough to enable us to see plainly all that was going on. The music commenced again strongly, and then Mr. Home brought the accordion over the top of the table and held it opposite to Dr. Bird. We then all saw it contracting and expanding vigorously, and heard it emitting sounds, Mr. Home part of this time supporting the instrument on his little finger tip by means of a string I had tied round the handle.

Serjt. Cox held a flower under the table with the request that it might be taken and given to a lady. It was soon taken from his hand, and after a considerable time, when the circumstance was almost forgotten, a white object was laid on the edge of the table, between Miss Bird and Mr. Wr. Crookes, and she said her dress was pulled very much. As the object moved about it was seen to be Serjt. Cox's flower. The message then came :—

"We gave it you. A flower."

Mr. Home then went into a trance, spoke a little to Mrs. Wr. Crookes in a low tone, and then got up. He walked about the room in an undecided sort of way, but finally sat down again, saying it all felt confused, and then woke.

A message was then given :—

"Hands off the table.

We accordingly removed our hands and joined hands all round. In a minute a slight movement of my note-book was heard, and I could see that a volume (*Incidents in my Life*), which was resting on the leaves to keep them down, was gradually sliding over it in jerks about an eighth of an inch at a time. The motion was visible to all present and the noise was also plainly heard by everyone. Nothing more than this took place, and we soon had the message :—

"We find we have no more power."

The meeting then broke up.

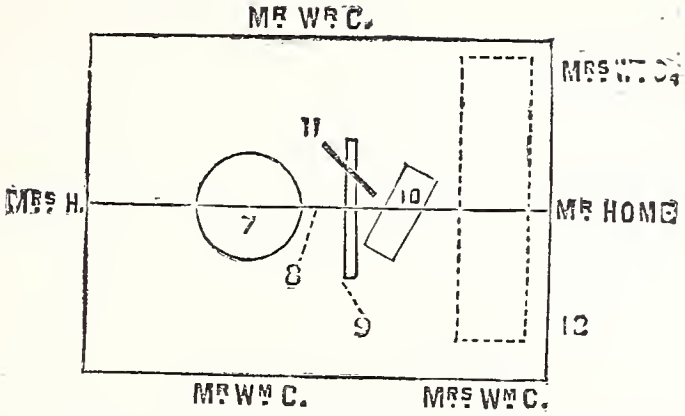
During the latter part of the evening Mrs. Wm. Crookes, who was sitting near Mr. Home, felt her hands and arm constantly touched and stroked, and the form of fingers was for some time moving about under the cloth close to her. These were felt by myself and Miss A. Crookes, and our hands were patted by them at our request. Mrs. Wm. Crookes also saw a delicate finger and thumb playing about a rose in Mr. Home's coat and plucking the petals one at a time and laying some on the table by her side and giving others to Mrs. Wr. Crookes. Three times she saw an entire hand rise up and pass quite over her own hands, which were on the table. It was small, plump, and delicately shaped, ending at the wrist in a cloud.

At another time luminous appearances were seen on Mr. Home's head and before his face. All present saw so much, and Mrs. Wm. Crookes said they were hands.

(VII.) Sunday, July 16th, 1871.—Sitting at 20, Mornington-road.

Present:—Mr. D. D. Home (medium), Mrs. Wr. Crookes, Mr. Wr Crookes, Mrs. Humphrey, Mr. Wm. Crookes, Mrs. Wm. Crookes.

In the following order :—



7—Is a bouquet of flowers which my wife and I had brought from Brook Green this evening. They had been given to the servant to arrange, and were brought into the room and put on the table *after* we had all sat down and the séance had commenced.

8—Is the part of the crack in the table subsequently referred to.

9—Is the wooden wand. 10—Is a sheet of note-paper. 11—Is a pencil.

At the first part of the séance the phonautograph [1] was on the table in front of Mr. Home, and I sat or stood at position 12.

On this occasion I asked for the spirits not to rap on the membrane, but to press on it as in the experiment to make the board light and heavy.

This was accordingly done, and 10 tracings of curves were taken on the smoked glass :—

No. 1.—Mr. Home's hand on edge of drum.

No. 2. } Mrs. Wr. Crookes's fingers on edge of drum, and Mr. Home's
No. 3. } hands touching hers.

No. 4.—Mr. Home's fingers on edge of drum.

No. 5.—Mr. Home's fingers on support not touching the drum.

No. 6.—Mr. Home's fingers touching the membrane. On looking at this I remarked that this curve might have been produced by pressure of the fingers. The message was then given :—

"Hands off table."

No. 7.—Mr. Home's hands on the table, no one else touching it.

No. 8.—Mr. Home's hand held over the parchment, fingers pointing downwards quite still.

No. 9.—The same as No. 8.

No. 10.—Mr. Home's fingers touching stand ; not touching the drum or parchment.

After taking these tracings the phonautograph was removed, and we sat down quietly in the positions shown on diagram. The room was sufficiently

[1] For a description of the phonautograph see *Quarterly Journal of Science* for October, 1871.

lighted by means of two spirit lamps with soda flames placed on the top of the gaselier.

After a few minutes the wooden wand moved a little on the table, gently sliding along. It then raised itself up at one end and then fell down again. Next it lifted up sideways and turned half over. It continued moving about in this manner for several minutes. Mr. Home said he saw a hand over the lath moving it about. No one else saw the hand.

The flowers in the bouquet were moved and rustled about several times.

A message was then given, the answers being sometimes given by raps on the table and sometimes by the wand rising up and striking the table three times in rapid succession :—

"A prayer."

Mr. Home took the accordion in the usual manner and we then were favoured with the most beautiful piece of music I ever heard. It was very solemn and was executed perfectly : the "fingering" of the notes was finer than anything I could imagine. During this piece, which lasted for about 10 minutes, we heard a man's rich voice[1] accompanying it in one corner of the room, and a bird whistling and chirping.

Mr. Home then held his hand over the bouquet and shook it (his hand) with a rapid quivering movement.

I asked if the pencil would be taken and a word written on the paper before our eyes. The pencil was moved and lifted up two or three times, but it fell down again. The lath moved up to the pencil and seemed trying to help it, but it was of no use.

A message was given :—

"It is impossible for matter to pass through matter ; but we will show you what we can do."

We waited in silence. Presently Mrs. Wm. Crookes said she saw a luminous appearance over the bouquet. Mr. Wr. Crookes said he saw the same, and Mr. Home said he saw a hand moving about.

A piece of ornamental grass about inches long here moved out of the bouquet, and was seen to slowly disappear just in front at the position (8) on the plan, as if it were passing through the table.

Immediately after it had disappeared through the table Mrs. Wm. Crookes saw a hand appear from beneath the table, between her and Mr. Home, holding the piece of grass. It brought it up to her shoulder, tapped it against her two or three times with a noise audible to all, and then took the grass down on to the floor, where the hand disappeared. Only Mrs. Wm. Crookes and Mr. Home saw the hand ; but we all saw the movements of the piece of grass, which were as I have described.

It was then told us that the grass had been passed through the division in the table. On measuring the diameter of this division found it to be barely $\frac{1}{8}$th inch, and the piece of grass was far too thick to enable me to force it

[1] See incident on p. 122.

through without injuring it. Yet it passed through the chink very quietly and smoothly and did not show the least signs of pressure.

The message was then given by notes on the accordion :—

"God bless you. Good night."

A parting tune was then played on the accordion, and the séance then broke up at half-past 11.

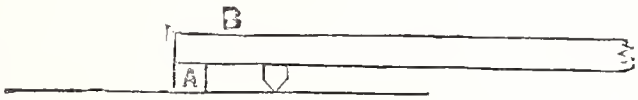
(VIII.) Sunday, July 30th, 1871. Sitting at 20, Mornington-road.

Present:—Mr. D. D. Home, Mr. Wm. Crookes, Mrs. Wm. Crookes, Mrs. Humphrey, Mr. Wr. Crookes, Mrs. Wr. Crookes, Mrs. I., Miss A. Crookes, Mr. H. Crookes, Mr. T., and at 11 p.m. Lord A.

In the dining-room round the dining-table.

During the former part of the evening the gas was lighted; during the latter part the room was illuminated by two spirit lamps.

The first experiment tried was the alteration of the weight of the board by means of the improved apparatus, by which the movements are registered on smoked glass. In order to meet Mr. C.'s objection the short end of the board was firmly supported on a foot (A) in such a manner that no amount



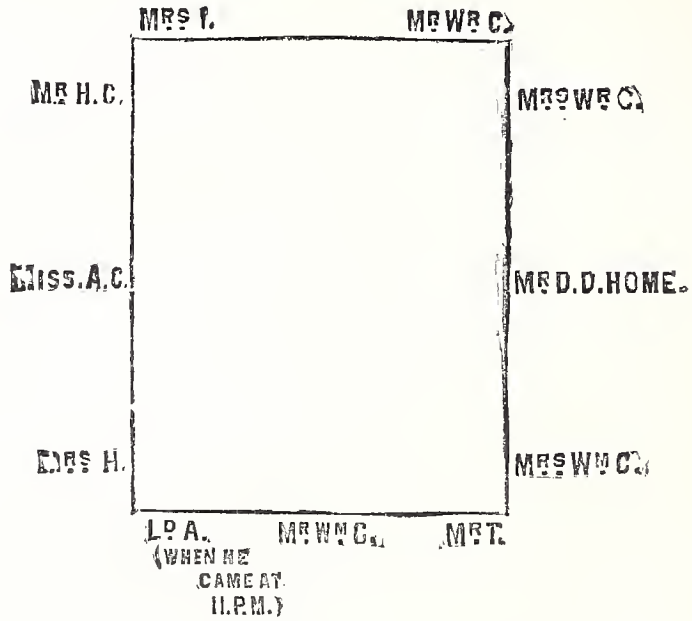
of pressure of the hands at (B) produced any appreciable movement of the long end. The adjustments were made and well tested by myself before Mr. Home entered the room.

I took Mr. Home's two hands and placed them myself in the proper position on the board, the tips of his fingers being (at B) just half-way from the extremity to the fulcrum. Mrs. Wm. Crookes, who was sitting next to Mr. Home, and by the side of the apparatus, watched his hands the whole time, and I also watched him whilst the plate of glass was moving. Six plates were tried and good results obtained. The experiments were not tried directly one after the other, but when all was ready Mr. Home generally told me when to set the clock going, saying that he felt an influence on the instrument or that he saw a spirit standing near. On one or two occasions loud raps were heard on the board, and the signal to set the clock going was given at my request by three raps. The board sometimes swayed sideways as well as vertically.

During the progress of one of these experiments the chair in which I had been sitting, which was standing near the apparatus, was seen to move up close to the table.

The register of the index showed a maximum pull of 2lb.

The apparatus was removed, and we took our seats round the table in the following positions :—



Raps occurred in different parts of the table when I placed my hands there. Raps were then given on the wooden lath when Mr. Home had hold of one end.

The accordion was held by Mr. Home in the usual position under the table. Whilst it played Mrs. I. looked beneath and saw it playing. Mr. Home removed his hand altogether from it, and held both hands above the table. During this Mrs. I. said she saw a luminous hand playing the accordion.

The gas was now turned out, and three spirit lamps were lighted.

Loud raps were heard, and the planchette moved across a sheet of paper, leaving a mark with the pencil.

The lath moved some inches.

The accordion, which had been left by Mr. Home under the table, now began to play and move about without anyone touching it. It dropped on to my foot, then dragged itself away, playing all the time, and went to Mrs. I. It got on to her knees.

Mr. Home then took it in his hand, where it played, and delivered the following message by chords in the usual way :—

"Our joy and thankfulness to have been allowed to make our presence manifest. We thank you for your patience and we thank GOD for His love."

Mr. Home got up and stood behind in full view of all, holding the accordion out at arm's length. We all saw it expanding and contracting and heard it playing a melody. Mr. Home then let go of the accordion, which went behind his back and there continued to play; his feet being visible and also his two hands, which were in front of him.

Mr. Home then walked to the open space in the room between Mrs. I.'s chair and the sideboard and stood there quite upright and quiet. He then said, "I'm rising, I'm rising"; when we all saw him rise from the ground slowly to a height of about six inches, remain there for about 10 seconds, and then slowly descend. From my position I could not see his feet, but I distinctly saw his head, projected against the opposite wall, rise up, and Mr. Wr. Crookes, who was sitting near where Mr. Home was, said that his feet were in the air. There was no stool or other thing near which could have aided him. Moreover, the movement was a smooth continuous glide upwards.

Whilst this was going on we heard the accordion fall heavily to the ground. It had been suspended in the air behind the chair where Mr. Home had been sitting. When it fell Mr. Home was about 10ft. from it.

Mr. Home still standing behind Mrs. I. and Mr. Wr. Crookes, the accordion was both seen and heard to move about behind him without his hands touching it. It then played a tune without contact and floating in the air.

Mr. Home then took the accordion in one hand and held it out so that we could all see it (he was still standing up behind Mrs. I. and Mr. Wr. Crookes). We then saw the accordion expand and contract and heard a tune played. Mrs. Wm. Crookes and Mr. Home saw a light on the lower part of the accordion, where the keys were, and we then heard and saw the keys clicked and depressed one after the other fairly and deliberately, as if to show us that the power doing it, although invisible (or nearly so) to us, had full control over the instrument.

A beautiful tune was then played whilst Mr. Home was standing up holding the accordion out in full view of everyone.

Mr. Home then came round behind me and telling me to hold my left arm out placed the accordion under my arm, the keys hanging down and the upper part pressing upwards against my upper arm. He then left go and the accordion remained there. He then placed his two hands one on each of my shoulders. In this position, no one touching the accordion but myself, and every one noticing what was taking place, the instrument played notes but no tune.

Mr. Home then sat down in his chair, and we were told by raps to open the table about an inch or an inch and a-half.

Mr. T. touched the point of the lath, when raps immediately came on it.

The planchette, which was on the table resting on a sheet of paper, now moved a few inches.

Sounds were heard on the accordion, which was on the floor, not held by Mr. Home.

The corner of the paper next to Mrs. Wm. Crookes (on which the planchette was standing) moved up and down. (These three last phenomena were going on simultaneously.)

I felt something touch my knee; it then went to Mrs. I., then to Miss A. Crookes.

Whilst this was going on I held the bell under the table, and it was taken from me and rung round beneath. It was then given to Mrs. I. by a hand which she described as soft and warm.

The lath was now seen to move about a little.

Mrs. Wm. Crookes saw a hand and fingers touching the flower in Mr. Home's button-hole. The flower was then taken by the hand and given to Mrs. I. and the green leaf was in a similar manner given to Mr. T.

Mrs. Wm. Crookes and Mr. Home saw the hand doing this, the others only saw the flower and leaf moving through the air.

Mrs. Wm. Crookes held a rose below the table ; it was touched and then taken.

The sound as of a drum was heard on the accordion.

The lath lifted itself up on its edge, then reared itself upon one end and fell down. It then floated up four inches above the table, and moved quite round the circle, pointing to Mrs. Wm. Crookes. It then rose up and passed over our heads outside the circle.

The planchette moved about a good deal, marking the paper.

The cloth was dragged along the table.

Whilst the lath was moving round the circle, the accordion played a tune in Mr. Home's hand whilst Mrs. Wm. Crookes's hand was also on it.

Mrs. Wm. Crookes put her hand near the lath, when it came up to it, and moved about it very much.

The paper on which the planchette was resting moved about us as if by a hand. Many present saw a hand doing it. (Mr. Home and Mrs. Wm. Crookes saw this hand.)

Mr. H. Crookes saw a luminous hand come up between Mr. Home and Mrs. Wm. Crookes.

Some time during the evening Mrs. Wm. Crookes's handkerchief, which had been in her pocket, was taken out of it by a hand.

I saw something white moving about in the further corner of the room (diagonal to door) under a chair. On my remarking this, a message was given by raps :—

"William ! take it."

On getting up and taking it I saw that it was my wife's pocket handkerchief tied in a knot, and having the stalk of the rose which had been taken from her tied up in it. The place where I picked up the handkerchief was fifteen feet from where she had been sitting.

A glass water bottle which was on the table now floated up and rapped against the planchette.

Mr. Home said : "I see a face. I see Philip's face. Philip ! Brother !"

The water and tumbler now rose up together, and we had answers to questions by their tapping together whilst floating in the air about eight inches above the table, and moving backwards and forwards from one to the other of the circle.

Mr. H. Crookes said a hand was tickling his knee.

A finger was protruded up the opening of the table between Miss A. Crookes and the water bottle.

Miss A. Crookes, Mr. H. Crookes, and Mrs. I. were then touched.

Fingers came up the opening of the table a second time and waved about.

The lath, which on its last excursion had settled in front of the further window, quite away from the circle, now moved along the floor four or five times very noisily. It then came up to Mr. T., and passed into the circle

over his shoulder. It settled on the table and then rose up again, pointing to Mrs. Wm. Crookes's mouth.

The lath then went to the water bottle and pushed it several times nearly over, to move it away from the opening in the table. The lath then went endways down the opening.

The tumbler moved about a little.

The lath moved up through the opening in the table and answered "Yes" and "No" to questions, by bobbing up and down three times or once.

A hand was seen by some, and a luminous cloud by others, pulling the flowers about which were in a stand on the table. A flower was then seen to be carried deliberately and given to Mrs. Wr. Crookes.

Another flower was taken by the hand and brought over to Mrs. Wm. Crookes; it was dropped between her and Mr. Home.

Raps then said:—

"We must go."

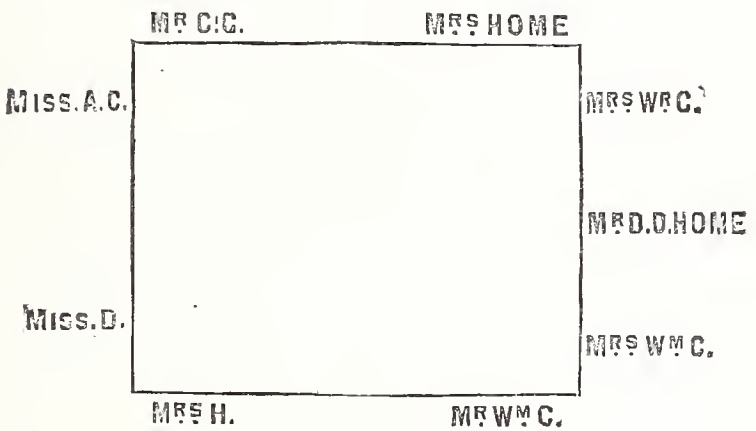
The raps then commenced loudly all over the room and got fainter and fainter until they became inaudible.

The séance then broke up.

(IX.) Saturday, November 25th, 1871.—Sitting at 20, Mornington-road. From 9.15 p.m. to 11.30 p.m.

Present:—Mr. D. D. Home (medium), Mrs. Home, Miss Douglas, Mrs. Humphrey, Mr. and Mrs. Wm. Crookes, Mrs. Wr. Crookes, Miss Crookes, Mr. C. Gimingham.

In the dining-room round the dining-table; no leaf in.



On the table were two glass troughs of flowers; accordion; paper; planchette; some marked pieces of paper; pencils; handbell; spirit lamps; matches, &c. A cloth was on. The lath was on the table.

There was a good fire in the room, which, however, got low towards the end of the sitting, and a gas light was burning during the greater part of the time. When that was put out there was still light enough in the room from the fire and the street to enable us to distinguish each other, and see the objects on the table.

We had scarcely sat down a minute when raps were heard from different parts of the table ; a strong vibration of our chairs and the table was felt, and sounds like thumps on the floor were heard. A curious metallic tapping sound was heard on the iron screw of the table.

A message :—"*Selfish*," in reply to a remark I made.

A rustling was heard on the table, and one of the glass flower troughs was seen to move along by jerks, till it had travelled about two inches and had got a little on to a large sheet of paper. This movement continued whilst all were watching it. Mr. Home's hands were quiet in front of him.

The wooden lath was then seen to slide an inch or so backwards and forwards.

Mr. Home took the accordion in the usual manner, holding it under the table. It immediately began to sound. Mr. Home then brought it from under the table (he said it appeared to move of its own accord, dragging his hand after it), playing all the time, and at last held it hanging down at the back of his chair in a very constrained attitude, his feet being under the table and his other hand on the table. In this position the instrument played chords and separate notes, but not any definite tune. The sounds on it became louder and the table began to vibrate ; this got stronger and stronger until the noise of the accordion playing simple chords was very great, whilst the table actually jumped up and down keeping accurate time with the music. This became so violent that it might have been heard all over the house. It ceased suddenly and in a minute recommenced.

Miss Douglas said : "Dear spirits, how pleased you would have been had you lived to witness the progress Spiritualism is now making." Immediately a message was given in reply :—

"We are not dead !"

Mr. Home brought the accordion back to under the table, when it sounded notes again. There was a sound as of a man's bass voice[1] accompanying it. On mentioning this, one note, "No," was given, and the musical bar repeated several times slowly, till we found out that it was caused by a peculiar discord played on a bass note. On finding this out the instrument burst out with its usual jubilant bar.

Miss Douglas saying that she felt touched, I asked if we might get some direct writing. Two raps were given. I asked Miss Douglas to put the marked sheets of paper and pencil under the table by her feet, and requested that something might be written on it.

Three raps.

The power now seemed to go to the lath ; it was lifted up several times at alternate ends to a height of several inches and then floated quite above the table.

The planchette moved irregularly along the paper, making a mark with the pencil.

Some of those who were present said they saw a luminous hand touching the paper. I saw the paper raised up at the side away from Mr. Home.

I felt touched strongly on the knee by something feeling like fingers. Or

[1] See incident on p. 116.

putting my hand down a sheet of paper was put into it. I said, "Is anything written on it?"

"Yes."

It being too dark to see what was written, I asked that it might be told me by raps, and on repeating the alphabet I got the following:—

"Retojdourdanie."

On striking a light the following was seen neatly written:—

R. C. to J. D.

Our Daniel.

Miss Douglas said the R. C. was Robert Chambers, whilst J. D. were the initials of her own name.

As the paper was a sheet I had marked and it was free from any writing when put under the table, whilst no one had moved from the table in the meantime, this was as striking a manifestation as I had ever seen.

Mrs. Home, who for some time past had said a hand was holding her hand, now said that the hand was under her dress. Each of us in turn went round and felt it. To me it felt very small and I could not distinguish any form which I could be certain was a hand. Mrs. Wm. Crookes, who went next, said it was at first very small but it seemed to grow large as she felt it until it was exactly like a large hand, the knuckles and fingers being very distinct. The hand remained with Mrs. Home for half an hour at least. On asking for the name of the hand which had held hers, the name

"Alexandrine"

was spelt out.

A sound like the snapping of fingers was heard. On speaking of this it was repeated at our request in different parts of the room.

The wooden lath which was lying just in front of me appeared to move slightly, whereupon I leaned forward and watched it intently. It rose up about half an inch, then sank down, and afterwards turned up on one end till it was upright, and then descended on the other side till it touched one of Mr. Home's hands. One end remained all the time on the table whilst the other end described a semicircle. The movement was very deliberate. The lath then moved away from Mr. Home's hands and laid itself across the planchette. Both it and the planchette moved slightly. The lath then moved off and stood quite upright on the table. It then slowly descended.

The accordion, which had been for some time quiet under the table, now was heard to sound and move about. Presently Miss Douglas felt it come to her and push against her knees.

The window curtains at the end of the room furthest from the door, and seven feet from where Mr. Home was sitting, were seen to move about. They opened in the centre for a space of about a foot, exactly as if a man had divided them with his hands. Mr. Home said he saw a dark form standing in front of the window moving the curtains, and Mrs. Wm. Crookes and Mr. C. Gimingham also said they saw a shadow of a form. The form was then seen to go behind one curtain and move it outwards into the room for a distance of about 18 inches. This was repeated several times.

The wooden lath now rose from the table and rested one end on my knuckles, the other end being on the table. It then rose up and tapped me

several times. Questions which I put were answered "Yes" or "No," in this manner. I said, "Do you know the Morse alphabet?" "Yes." "Could you give me a message by it?" "Yes." As soon as this was rapped out the lath commenced rapping my knuckles in long and short taps, in a manner exactly resembling a "Morse" message. My knowledge of the code and of reading by sound is not sufficient to enable me to say positively that it was a message; but it sounded exactly like one; the long and short taps and the pauses were exactly similar, and Mr. C. Gimingham, who has had practice with the Morse code, feels almost certain that it was so.

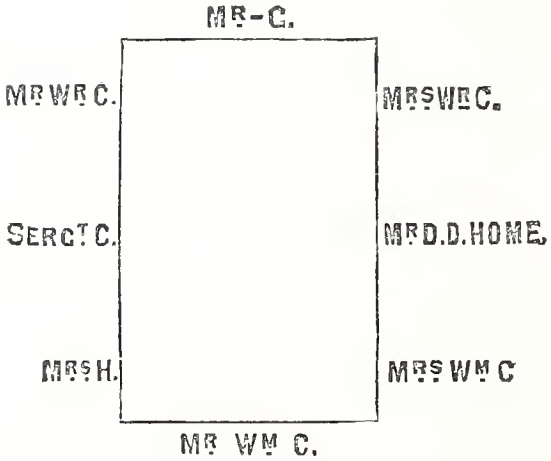
Afterwards at my request the Morse alphabet was given distinctly by taps on the table. During this time Mrs. Wm. Crookes was standing on the other side of the table by Mrs. Home. Her chair between me and Mr. Home was empty and I could see Mr. Home's hands resting quietly on the table in front of him.

Mr. Home went into a trance, and addressed several of us in turn.

The séance ended at about 11.30 p.m.

(X.) Tuesday, April 16th, 1872.—Sitting at 20, Mornington-road. From 8.50 p.m.

Present:—Mr. D. D. Home (medium), Mr. Serjt. Cox, Mr. and Mrs. Wm. Crookes, Mr. and Mrs. Wr. Crookes, Mrs. Humphrey, Mr. F. G., in the following order:—



On the table were flowers, an accordion, a lath, a bell, paper, and pencils.

Phenomena.—Creaks were heard, followed by a trembling of the table and chairs.

The table gently moved from Mr. Wr. Crookes to Mr. Home.

Raps were heard on different parts of the table.

Mr. F. G. was under the table when the movements were going on. There was vibration and knocks on the floor. The table moved six inches from Mr. F. G. to me; and there was a strong trembling of the table.

A shower of loud ticks by Mr. F. G. was heard, and thumps as of a foot on the floor.

The table trembled twice at Mr. F. G.'s request; then twice and a third time after an interval. This was done several times.

The table became light and heavy. Mr. F. G. tested it, and there was no mistake.

There were strong movements of the table when Mr. F. G. was under it.

Mr. Home's chair moved back six inches.

The accordion was taken by Mr. Home in the usual manner and sounded. Mr. F. G. looked under, whilst it was expanding and contracting.

We were speaking of the music, when a message was given :—

"It comes from the heart. A hymn of praise."

After which beautiful sacred music was played.

The bell was taken from Mrs. Wm. Crookes, and tinkled under the table for some time. It was thrown down close to Mr. F. G., who took it.

The accordion laid down under the table by Serjt. Cox and played a few notes, when all hands were on the table. Mrs. Wm. Crookes put her feet on Mr. Home's. A big hand pushed Mrs. Wm. Crookes's feet away. The accordion played and then pushed into Mr. F. G.'s hand. Mr. F. G. held it for some time, but there was no sound, and it was given to Mr. Home.

Mrs. Wr. Crookes's dress was pulled round, while Mr. F. G. was looking on. Mrs. Wr. Crookes put her feet touching Mr. F. G.'s.

The accordion played in Mr. Home's hands. He said he felt a touch, on which there were five raps, and a message came :—

"We did."

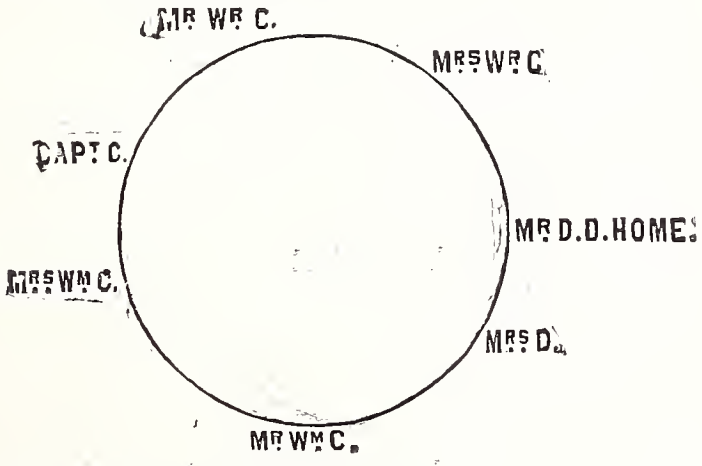
"The Last Rose of Summer" was played exquisitely. Mr. Home then put the accordion down. There was quietness for a minute, followed by movements of the table, and a message was given :—

"We have no more power."

(XI.) Sunday, April 21st, 1872.—Sitting at 24, Motcombe-street. The residence of my brother, Mr. Walter Crookes.

Present :—Mr. D. D. Home (medium), Mrs. Douglas, Capt. C., Mr. and Mrs. Wm. Crookes, Mr. and Mrs. Wr. Crookes.

In the drawing-room, round the centre table.



Phenomena :—Strong vibrations of the cabinet behind Mr. Home : con-

tinuous raps on the table: very strong vibrations of the cabinet. Then a long silence. Mr. Home went to the piano.

On his return the vibrations recommenced; then there were powerful raps on the table in front of me.

There were thumps on the table and then on the floor.

I was touched on the knee.

I was touched again on the knee. The table then rattled about so violently that I could not write.

Mr. Home took the accordion in the usual manner. It played a tune.

Mrs. Douglas's handkerchief was taken from her lap by a hand visible to her and Mr. Home, the accordion playing beautifully all the time. A message was given:—

"Try less light."

The handkerchief moved about along the floor, visible to all.

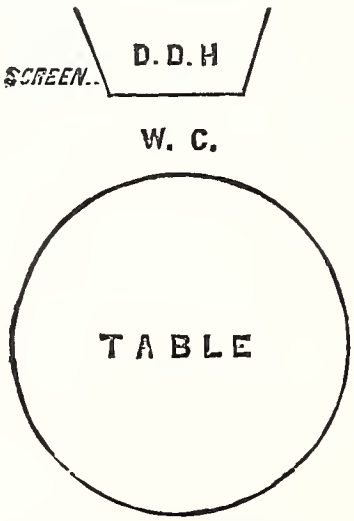
Mr. Home nearly disappeared under the table in a curious attitude, then he was (still in his chair) wheeled out from under the table still in the same attitude, his feet out in front off the ground. He was then sitting almost horizontally, his shoulders resting on his chair.

He asked Mrs. Wr. Crookes to remove the chair from under him as it was not supporting him. He was then seen to be sitting in the air supported by nothing visible.

Then Mr. Home rested the extreme top of his head on a chair, and his feet on the sofa. He said he felt supported in the middle very comfortably. The chair then moved away of its own accord, and Mr. Home rested flat over the floor behind Mrs. Wr. Crookes.

A stool then moved up from behind Mrs. Wr. Crookes to between her and Mr. Home.

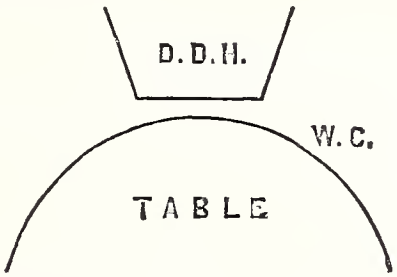
Mr. Home then got up, and after walking about the room went to a large glass screen and brought it close up to me, and opened it out thus:—



Mr. Home then put his hands on the screen, and we had raps on the glass. (The gas was turned brightly up during these experiments.)

Then Mr. Home put his hand on one leaf of the screen, and I put my hand where I chose on the other leaf. Raps came from under my hand.

The screen was then put thus :—



Mr. Home stood behind the screen and had the gas light shining full on him. He rested his two hands lightly on the top of the centre leaf of the screen. In this position we had the table cloth moved, raps on the table in front of the screen, and raps on the glass leaves (either one at request). A lady's dress was pulled, and the chairs were shaken.

The screen was then folded up and laid horizontally on two chairs, so as to form a glass table. Mr. Home sat at one side and I sat at the other side, by ourselves. The light was very good, and the whole of his legs and feet were easily seen through the screen.

Many experiments were then tried on this glass table. Raps came from it at my request where I desired. It was vibrated ; and once raps came when Mr. Home was not touching it.

The light was then lowered and the screen put aside.

The cushion from the sofa floated off it and came between Mr. Home and Mrs. Wr. Crookes.

Mr. Home took the accordion, and it played "Auld Lang Syne."

Someone was seen standing behind Mrs. Wm. Crookes.

Mrs. Wm. Crookes had severe pain in her head. Mr. Home came behind her and mesmerised her, and the pain went.

A message came to Mrs. Wr. Crookes.

Nothing more took place after this.

CROOKES AND SURVIVAL

CROOKES'S attitude to survival underwent some fluctuations over the years, and as much of his written material is known to be missing, the connection between his views and his experiences is often a matter for conjecture. In December 1869 he wrote a letter to Tyndall stating his conviction in the existence of a "new force" that he was proposing to test by experimental procedures. This is Crookes of the *Researches* speaking. The other Crookes speaks in the sixth paragraph of the same letter, where he discusses the possible existence of "unseen entities of a higher order" who may or may not have some connection with the force. He expressed himself open minded as to the nature of these entities, which he thought might be of nonhuman derivation.

This probably strikes the reader as an unusual notion, and (certainly the last hundred years has shown the crystallisation of two clear groups, the first interested in establishing the reality of the new force but remaining aloof from spiritist theorising, and the second wholly occupied with the question of survival and therefore with its sights set on the content of communications given through mental mediums. The principal investigators of later physical mediums such as Palladino, Eva C. and the Schneider brothers made it their business merely to ascertain that forms materialised or that objects levitated; they did not attribute such occurrences to spirit intervention, and were sometimes embarrassed when other researchers, such as Lodge, Crawford and Geley assumed that the performance of "the impossible" must be due to spirit activity, this being a way of asserting their existence outside the observed order of nature. Curiously enough, the physical mediums seem often to have responded closely in accordance with the expectations of their researchers, so that when sitting with the determinedly materialistic Richer or Schrenck-Notzing, Eva C.'s manifestations consisted of meaningless hands, faces and forms (consistent with

their belief in "teleplastic" creation by a medium using "teleplasm" from within her own organism, shaped by her own imagination), but when sitting privately with the bereaved Mme. Juliette Bisson she was reported to have produced a life size phantom of the deceased M. Bisson.

In Crookes's day those who accepted a spirit world as an actuality seem to have felt that physical phenomena were caused by "low spirits", and that for edification or information mental communications were to be preferred. Stainton Moses frequently complained that he dreaded rough manifestations, and the current expectation may have been that spirits who rapped on floors and tables, or threw objects round the room, or who chose to float trunklessly over the séance room table biting the hands of sitters (Serjeant Cox was bitten more than once), were not spirits of the class with whom the sitter could expect to have a rewarding exchange of ideas, and might even be sub-human entities.

In the Tyndall letter Crookes, speaking of his experiences over the past six months, shows himself uncommitted to any of the three possible explanations of physical phenomena—the humanist standpoint adopted by Cox, the spiritist belief **of** Stainton Moses, or the survival hypothesis. If this letter stood alone we should have to conclude that Crookes had had little or no experience of purported communications from the **de**ceased. However, a year later, while away from home on **the** solar eclipse expedition of 1870, he wrote in his diary an entry of some length, and great charm, confiding to the page **his** desolation at being separated from his much loved wife **and** children on New Year's Eve; he also made it abundantly clear, that during the past few years (presumably since the death of his brother Philip three years earlier) he had been participating in Spiritualist meetings, and was entirely convinced as to the reality of life after death and communion with the spirits of the departed. Bearing in mind the impartial tone of the Tyndall letter, it would seem that his two experiences, one **of** Spiritualistic communication and the other of the new physical force, impinged on his mind in the departmental way that has characterised the dichotomy among researchers.

The next item is a letter published in *The Spiritualist* of 15 June 1871, in which Crookes deals concisely with his own role

in relation to communications from "invisible intelligent beings distinct from the human race." Others, he says, make it their business to record messages, but his purpose is to ascertain the conditions that make communication possible. He leaves as an open question whether the spiritual entities (if in fact they existed) were "the spirits of dead men, or ... an order of beings separate from the human race." It may be difficult for the modern reader to appreciate the reality to Crookes of nonhuman spirits, but the extent of his leaning in this direction may be judged by a letter written on 29 August 1874 to his chemical assistant, Charles Gimingham. In this extraordinary document he states as his personal opinion that the trouble with Florence Cook's recent sittings was due to the injurious behaviour of a "fiend." Crookes explains that after consulting Harrison he has "succeeded in consigning it to the bottomless pit whence it came." Since Crookes would have been as unlikely to feign a belief in fiends for the benefit of his laboratory assistant as to confide insincerities to his diary, it seems reasonable to take these utterances as truly representing his views.

Following on from these letters, the letter of 1st August 1874 to Mme. B. must come as something of a surprise, for his confidence in survival appears to have vanished. He states categorically that his attempts at establishing the human personality of spirits has been a total failure, though to "fix the identity of a deceased person has been the chief object I have had before me for the last three or four years, and I have neglected no opportunity myself on that point." The reader of the *Researches* and the reports on sittings with D. D. Home will probably feel that these opportunities, such as they were, were almost entirely neglected. If however Crookes had at that time had "hundreds of communications *professing* to come from deceased friends" then it is clear that he must have had them at sittings other than those of which we now have his reports, and probably more akin to present day "demonstrations of clairvoyance" where communications are the purpose of the meetings. It is not difficult to imagine Crookes cross-examining a

[purported communicator in the same way as investigators of celebrated mental mediums such as Mrs. Piper, and the disillusionment expressed in the letter to Mme. B. may explain the lack of records relating to these sittings; his experiences with I,

mental mediumship since 1870 must have caused him to reappraise the earlier sense of conviction expressed in his diary, and his experiments with the most remarkable physical mediums of all time had apparently done nothing to redress the balance.

After this date there is very little to record in the way of Crookes's writings until some 40 years later. It is clear that he did not entirely lose touch with the subject, or lose interest in it, but his career as an active researcher appears to have come to a halt. In 1883 he joined the Theosophical Society, and remained a member for the rest of his life. An interesting letter from C. C. Massey to Colonel Olcott is preserved in the Theosophical Archives, and the extract quoted shows, in so far as Massey can be relied on for accuracy, that Crookes's swing away from survival to a belief in non-human spirits was at that date complete.

In 1904 Crookes wrote a letter (quoted by Sir Arthur Conan Doyle) on the occasion of Florence Cook's death, in which he once again spoke of "certain belief" in survival; we cannot however conclude that this letter expressed his own belief at that date, since he may merely have been speaking words of comfort.

The materialisation of Katie King is probably the most controversial subject in the whole of Crookes's career, and the attacks on him in relation to Florence Cook have been dealt with already. The letter written by Crookes to Lodge in 1910 shows that he still adhered to his belief in the corporeal character of the materialisation, and believed Katie's blood to have been human—unless the "like" human blood is a reservation. His comment on Lodge's "Survival of Man" is interesting, since this book deals very cogently with the type of survival proof, and mental mediumship in general, that is largely absent from Crookes's own researches.

In May 1916 Crookes's wife died, to his very great sorrow. After that date Crookes became once more convinced as he had been before 1870 about the reality of survival, and but for a letter written in 1915 it might have been thought that grief had overturned a judgment of some 40 years' standing for no valid reason. This letter indicates that before his wife's death Crookes had already swung back towards belief. The letter

to Miss Bird shows the swing continuing after his wife's death in the same direction as before it. In *Light* for 9 December 1916 a very cautious statement appeared under Crookes's name, showing him taking up much the same position as in the letter to Tyndall in 1869, i.e., asserting the reality of physical phenomena, considering that they "point to the existence of another order of human life" and suggesting that they "demonstrate the possibility" of communication between this world and the next. This statement was in fact drawn up for Crookes by the editor of *Light,* and the letter from Sir Oliver Lodge to him is a most useful commentary on Crookes's attitude. It is clear that despite his great anxiety for conviction, Crookes retained his critical faculties sufficiently to distinguish the will to believe from acceptable proof.

At the end of that same month Crookes received what he felt to be his proof, obtaining "spirit" photographs of his wife through the medium William Hope. The correspondence between Crookes and Lodge concerning these sittings with the Crewe circle show that Crookes had not lost any of his lifelong faith in his own ability to carry out his researches in a competent manner; he may perhaps have overestimated his ability to keep up with the march of photographic techniques, because according to Fournier d'Albe, the plate was said by Crookes's assistant to show clear signs of double exposure. His own depth of conviction is shown by the letter of 1917 to Miss Bird.

In April or May of the following year the most remarkable sitting took place at Crookes's own house. It is reported by Miss F. R. Scatcherd (a member of the Society for Psychical Research, and Editor of the *Asiatic Review),* and if her report is to be relied on this sitting must have given Crookes the certainty he had been seeking for fifty years. The identity of Mrs. Z. was a mystery until Dr. Medhurst, sorting through bundles of apparently expendable old letters, came to the item printed at the end of this section together with the notes made by Dr. Medhurst about its provenance and significance.

LETTER FROM CROOKES TO TYNDAL[1]

Dated 22 December, 1869

I FEEL thankful for the opportunity you have afforded me of reading your letter, of this date, to the Secretary of the Dialectical Society,2 and especially for the flattering words in which you speak of me. So highly do I value your good opinion that I would rather not at present join in the invitation which it appears you have received.

This is how I stand with regard to Spiritualism. Some six months ago, having no knowledge of the subject beyond what I had derived from sundry published letters and replies, a friend told me of some 'very extraordinary occurrences which had happened within his own experience. I do not feel at liberty to mention my friend's name, but he is an F.R.S.,3 and deservedly stands in the foremost rank of experimental philosophers. He assured me that he had witnessed phenomena alleged to be spiritual, which he was unable to explain by any known physical force, and advised me to take the first opportunity of witnessing such things for myself and forming my own judgment upon them.

A short time afterwards I happened to make the acquaintance of some leading members of the Dialectical

[1] This letter to Professor Tyndall, is preserved among uncatalogued letters in the Tyndall Trunk at the Royal Institution.

2 The London Dialectical Society was established in 1867, and in 1869 a committee was set up to "investigate the phenomena alleged to be Spiritual Manifestations, and to report thereon."

[3] Perhaps Dr. William Huggins. It is to be noted that on 16 June, 1879, Crookes wrote to Huggins, saying that he would prefer Tyndall not to be a member of a committee to be set up for investigating phenomena, on the grounds that he "would be all the time playing tricks, pushing or pulling the table, rapping with his feet, jumping up and down, imposing conditions such as `If the spirits can rap on the table let them rap in that corner of the room' *(vide* his *Science and Spirits)* and generally interfering with the progress **of** the phenomena." Psychical researchers will recognise an accurate portrait of an investigator born to kill the goose before it has laid any eggs at all, **and** will have every sympathy with Crookes.

Society, and was invited by them to join their investigation committee. This I declined. I occasionally, attend as a visitor, but only on condition that I should not be asked to give an opinion, and that my name should not be mentioned in connection with the subject. Mr. Bennett forgot this when he wrote to you.

At some of their meetings nothing took place which could not easily be accounted for; at others I have seen phenomena which could only be explained on the almost impossible supposition of gross fraud and collusion on the part of many ladies and gentlemen present; but at one or two I have certainly witnessed occurrences which appear beyond the domain of any known physical force.

Something new and worthy of the notice of the man of science I am tolerably certain we are getting glimpses of, and I fancy my thoughts are shaping themselves in the direction of a power in some way connected with gravitation. I have seen just enough to raise my curiosity and urge me to investigate; but I must do so in my own laboratory and at my own time, and test everything more calmly than is possible when I am in a party of enthusiasts.

Most of the observed facts are so encrusted over with superstition that it is hard to separate one from the other, and certainly the bulk of spiritualists are amongst the most credulous of mortals, although there are some honourable exceptions, Mr. Varley[4] and Mr. Wallace [5] for instance. I see nothing unphilosophical in the idea that there exist in nature unseen entities of a higher order, or possessing different powers, then (sic) the human race, but as yet I have witnessed nothing which satisfies me that such intelligences are instrumental in producing such phenomena.

I have lately devised some test experiments, which, whether they succeed or not, can hardly fail to give me some information. I wish however to keep quiet in the matter, and not to have my name mixed up with spiritualism until I feel justified in bringing the results of my investigation before the Royal

4 Cromwell Varlet', F.R.S., who was quite convinced as to the reality of spirits.

5 Alfred Russel Wallace, F.R.S., who testified to numerous materialisations including one that emerged in full light from the side of the medium F. W. Monck, and was later reabsorbed.

Society, or in showing them experimentally at the Royal Institution table.

If in the mean time I should meet with anything in my laboratory which I think worthy of your notice, would you mind the trouble of coming here, *as a friend,* and *in your private capacity only,* and seeing what I can show? taking your chance of the "small magnets" being thrown out of gear by your presence.

Believe me, very sincerely yours,

WILLIAM CROOKES

EXTRACT FROM CROOKES'S DIARY

Saturday, December 31st, 1870.—New Year's Eve! ...

I cannot help reverting in thought to this time last year. Nelly and I were then sittin[g] together in communion with dear departed friends, and as 12 o'clock struck they wished us many happy New Years. I feel that they are looking on now, and as space is no obstacle to them, they are, I believe, looking over my dear Nelly at the same time. Over us both I know there is one whom we all—spirits as well as mortals—bow down to as Father and Master, and it is my humble prayer to Him—the Great Good as the Mandarin calls Him—that He will continue His merciful protection to Nelly and me and our dear little family, and bring us together in the course of the next week to our happy home, which I shall now appreciate as I never have yet done. May He also allow us to continue to receive spiritual communications from my brother who passed over the boundary when in a ship at sea more than three years ago.

Nelly, Nelly, my own darling, God bless you. If my good wishes and prayers for your safety can fly across [n]early i,000 miles of sea to you at this moment, you must become conscious of the fact that I am thinking of you. My other New Years Eves come back to me one by one, and all of them—but this—have been hallowed by your presence and loving words. The time by Greenwich time now is just upon midnight, and I fed

that this is the time for holy communion with you and the dear children. Ship's time is twenty minutes later, and then I must shut up the book, dismiss these thoughts from my mind, and join in the revelry which will doubtless take place. Nelly darling and my dear children, Alice, Henry, Joe, Jack, Bernard, Walter, and little Nelly baby, I wish you all many, many happy New Years, and when the earthly years have ended may we continue to spend still happier ones in the spirit land, glimpses of which I am occasionally getting."

LETTER FROM CROOKES TO MISS D[1] Published in *The Spiritualist* for 15 June, 1871

20 Mornington Road, N.W.
May 10th, 1871.

Dear Miss D.,

I think the following expresses the idea which was in my mind the other evening, and which you asked me to put on paper.

Historical testimony is overwhelming as to the fact of communications having been made to mortals from invisible intelligent beings distinct from the human race : and contemporary evidence to similar occurrences is accumulating daily.

The subject can be approached from its sentimental and theological side, or examined in its scientific aspect, and without wishing in the least to disparage the labours of the many earnest enquirers who are pursuing their work under the guidance of their feelings, I think that for my part I am likely to do most good by following the bent of my own intellect, and examining the subject purely in its scientific relations.

From this point of view, it appears to be a matter for legitimate scientific enquiry to ascertain: —

First : If we have a spirit distinct from the body, and if this can be demonstrated by any other proof than the doubtful and disputable one of revelation?

Secondly : If so, what is the relationship of spirit to matter;

1 Described as J.H.D. in *The Spiritualist,* and evidently Miss Douglas, at whose house several of the sittings with D. D. Home took place.

what are its powers when so united, and what are its capabilities when in the free state?

Thirdly : If distinct intelligent spiritual entities do exist, **are** they the spirits of dead men, or are they an order of beings separate from the human race?

Fourthly : Do these intelligent beings communicate with **us** mortals at the present day; and are they endeavouring **to** improve the means of communication?

An enquiry of this kind, to be successful, should be undertaken by a man of science, without feeling and without sentiment. All romantic and superstitious ideas should be suppressed and he should be guided by hard intellect alone.

Assuming that there are invisible intelligent beings trying to communicate with us, it is reasonable to suppose that **improvements** can be made in their mode of telegraphy; and whilst others are obtaining copiously worded communications, I prefer to devote myself to the humbler but not less useful work **of** acting as telegraphic engineer, endeavouring to improve the instrumental means at this end of the line, to ascertain conditions which will render intercourse more certain, and generally to get the line in a good state of insulation. If these views **are** correct every improvement in this respect will react on itself, and will lead to further improvements by facilitating the **exchange** of ideas and mutual suggestions between the operators at each end.

Believe me, dear Miss D.,
Very sincerely yours,
WILLIAM CROOKES.

LETTER FROM CROOKES TO C. H. GIMINGHAM

29 AUGUST 1874

FLORRIE[1] and Ted[1] were here last night [28 August 1874] for a séance. She was very ill, fainting constantly. I however **got** Harrison[2] to give me a little instruction about this fiend who has annoyed us all and I hope I have now succeeded in consigning it to the bottomless pit whence it came. I don't think **it** will trouble Florrie again.

[1] Florence Cook and her husband, Captain Edward Elgie Corner.

2 W. H. Harrison, editor of *The Spiritualist.*

LETTER FROM CROOKES TO MADAME B.[1] OF ST. PETERSBURG

First published in *Light* 12 May 1900

20 Mornington Road, London.
August 1st, 1874.

Madame,

Your letter has just reached me. It is with great regret that I can hold out no hope of your receiving the satisfactory proofs you require by any means at my disposal. To 'fix the identity of a deceased person' has been the chief object I have had before me for the last three or four years, and I have neglected no opportunity myself on that point. I have had almost unlimited opportunities of investigation, more so than perhaps any other man in Europe. Mr. Home has scarcely given a *séance* in England during his recent visits without my presence at it, and most of his séances have been at my house or at my brother's. For six months Kate Fox was giving séances at my house once or twice a week, and since Christmas last Miss Cook has been almost like one of our family, being here more than at her parents' house, and giving tests and séances several times a week. In addition to these highly-gifted mediums I have had frequent séances with all the other good mediums whose names are familiar to Spiritualists.

During this whole time I have most earnestly desired to get the one proof you seek—the proof that the dead can return and communicate. I have never once had satisfactory proof that this is the case. I have had hundreds of communications professing to come from deceased friends, but whenever I try to get proof that they are really the individuals they profess to be, they break down. Not one has been able to answer the necessary questions to prove identity; and the great problem of the future is to me as impenetrable a mystery as ever it. was. All I am satisfied of is that there exist invisible intelligent beings, 'who profess to be spirits of deceased people, but the proofs which I require I have never yet had; although I am willing to admit

[1] In his biography of Crookes, Fournier d'Albe mentions a letter to Mme Boydanof as being among letters known to be lost from Cro°kes's papers at approximately this date.

that many of my friends declare that they have actually received the desired proofs, and I myself have been very close to conviction several times.

I cannot, therefore, hold out to you the slightest hope of your questions being satisfactorily answered by any medium who would be available for me. I do not think such tests are ever obtained unless, the person most interested in them—yourself for instance—is likewise present.

The nearest approach to a satisfactory test which I have had, has been through the mediumship of a private lady who developed as a writing medium under my own eye, and who has never sat with anyone else. With her I was getting great hopes that my doubts would have been cleared up; but unfortunately she lost the power.

My opinion is that if you were to sit for writing mediumship with some intimate friend, who would put one hand on yours to control the excess of power, you might get intelligent communications; you would, however, have probably to try several friends before you found the one most suitable.

I am extremely sorry I can give you no more comforting assurances. I have passed through the same frame of mind myself and I know how earnestly the soul craves for one little sign of life beyond the grave.

Your obedient servant,
W. CROOKES.

EXTRACT FROM A LETTER WRITTEN BY C. C. MASSEY[1] TO COLONEL R. S. OLCOTT[2]

DATED 17 DECEMBER 1875.

I sat next to Crookes at dinner the other night and had a very interesting conversation with him. Indeed neither of us spoke a word to any one else all the time. He is an Occultist, and

1 C. C. Massey was an original member of the SPR council, and wrote **an** important paper in the SPR Proc. 1886/7 entitled "The Possibilities of Mal-Observation in Relation to Evidence for the Phenomena of Spiritualism."

2 Colonel H. S. Olcott was the author of *People from the Other World,* Hartford, USA 1875.

a pupil of Eliphas Levi,[3] whom he met in Paris. He has himself produced results, but told me that like all profound Occultists there were secrets which he was not permitted to reveal. Is he an initiate in Madame's lodge? Probably not, for he does not appear to believe in *human* spirits and says that Magic is almost altogether bad and dangerous.

[3] In his *La Clef des Grandes Mysteres,* Bailliére, Paris, 1861, Levi discusses D. D. Home's phenomena, and while believing them to be paranormal, be takes the 'occultist' attitude that they do not originate from deceased human beings.

EXTRACT FROM LETTER[1] WRITTEN BY CROOKES

24 April 1904

Convey Lady Crookes's and my sincerest sympathy to the family in their irreparable loss. We trust that the certain belief that our loved ones, when they have passed over, are still watching over us—a belief which owes so much of its certainty to the mediumship of Mrs. Corner (or Florence Cook, as she will always be in our memory) will strengthen and console those who are left behind.

[1] This letter is quoted by Sir Arthur Conan Doyle in *The History of Spiritualism,* Vol. I, Cassell, London, 1926, p. 257.

LETTER FROM CROOKES TO LODGE[1]

7, Kensington Park Gardens,
London. W.
March 9th, 1910.

My dear Lodge,

Like you, I never saw or heard of Mr. F. R. Melton ,[2] before reading the cutting you send. His first sentence therefore is wrong if he means that he and we were present at the same séance. But the words "in company" may be held to mean that our investigations were going on about the same time, and

therefore he might consider when dabbling in unpopular subjects, he was in good company. I scarcely know what to say about his second par. I think if I had run a knife into K.K. she would have called out and bled, and a microscopic examination of her blood might have shown it to be like human blood.

Melton's remarks about polarised light are nonsense. I cannot imagine what he is driving at by his reference to trees!

I have just finished reading your "Survival of Man,"3 for the second time. I have not read for many years a book that has given me greater pleasure, or with which I more cordially agree.

Shall you be up on Tuesday for the S.P.R.?

Believe me,

very sincerely yours,

WILLIAM CROOKES.1

1 The correspondence with Lodge and Alice Bird is reproduced by kind permission of the Society for Psychical Research.

2 F. R. Melton spoke on "The Anatomy of Spirit Forms" at a Spiritualist meeting in Bristol on 20 February that year, and reported having extracted blood from a spirit form's materialised arm, and found it to be human blood under microscopic examination.

3 *The Survival of Man,* by Sir Oliver Lodge, Methuen, 1909.

LETTER FROM CROOKES TO LODGE

7, Kensington Park Gardens,
London, W.
Feb. 6th, 1915.

My dear Lodge,

I had no opportunity on Wednesday of speaking to you about the points raised in your letter.

I have no clear recollection of my use of the "Brick Wall" expression, but if I did use it I was only referring to several attempts I made with D. D. Home to trace some connection between natural forces and the physical phenomena so frequently occurring in his presence. I tried putting him in a helix of insulated wire through which electric currents of different intensities were passed; bringing strong magnets near him, and near the objects moving; illuminating him and objects on the

table with different coloured lights and other physical experiments which occurred to me. In these experiments Home took great interest, and was as much disappointed as I was at the failure to trace any influence over the spiritualistic phenomena. Here was the "Brick Wall!"

Respecting m4 alleged statement that I had never had a satisfactory proof that the dead can return and communicate you must bear in mind that the quotation is from a letter said to be written by me in 1874.[1] I do not remember much of my opinions at that date, but I have no doubt the statement was true at that early date.

Believe me,
very truly yours,
William Crookes.

1 Presumably the letter to Mme B.

LETTER FROM CROOKES TO MISS ALICE BIRD

Nov. 4th, 1916.

My dearest Lallah,

You are very good to inquire how my cold is getting on. I feel decidedly better, but the cold blustering weather will, I fear, keep it hanging about a little longer.

I must come over and have a talk to you about Sir [Arthur] Conan Doyle's article.

In the meantime let me beg you to read Sir Oliver Lodge's book *Raymond*[1]. *You will* find it of absorbing interest, and most convincing.

Wishing you are well, and continuing to have good news of your Sister,

Believe me, affectionately yours,
William Crookes.

[1] Raymond or Life and Death, by Sir Oliver Lodge, Methuen, 1916. This is a record of sittings with Mrs. Osborne Leonard, Vout Peters and other mental mediums in which highly interesting communications were given tending to prove the survival of Lodge's son Raymond, who fell in the 1914 war.

STATEMENT DRAWN UP BY THE EDITOR OF *"LIGHT"* AND SIGNED BY CROOKES

Responding to your invitation I have no objection to reaffirm my position on the subject of what are known as psychical phenomena, and to state once more, as I stated in my presidential address to the British Association in 1898, that in regard to the investigations first entered upon by me more than forty years ago, I adhere to my published statements and have nothing to retract. That I have not hitherto considered it necessary to commit myself to any generalisation upon the facts to which I have drawn attention, does not in any way invalidate my testimony regarding the facts themselves. In my opinion they substantiate the claims which have been made for them by several of my colleagues and friends in the Society for Psychical Research, viz., that they point to the existence of another order of human life continuous with this, and demonstrate the possibility in certain circumstances of communication between this world and the next.

WILLIAM CROOKES.

November 28th, 1916

LETTER FROM LODGE TO DAVID GOW, EDITOR OF "LIGHT"

Dear Mr. Gown,

I think you have done a service in getting a statement from Sir William Crookes. I have been rather exercised about that myself. Opponents are constantly claiming that he has changed his mind and come up against a brick wall in his investigations, and that that is why he has been so silent. You see his investigations did not touch so directly upon the question of survival as upon physical phenomena of various kinds, materialisations, etc., which might be held to implicate survival but did not demonstrate it in the clear way that has come through since. Hence I never feel quite sure how far he is satisfied with the evidence for survival itself. He inclines to it very strongly no doubt; but ancient scientific scepticism takes a good deal of

weakening before it gives way, and [is] liable to recrudesce at times in a surprising manner.

You will be careful no doubt not to commit him to anything more than he really wishes to be committed to. I wish he could draw it up himself. I expect that we shall not have him long .pith us.

In a note to me he says that he rather envies me the absolute proof I have obtained about the continued existence of my son. I gather that he rather wishes that he could obtain similar absolute conviction about the continued existence of his wife, with whom he lived over sixty years. But this is not a matter to touch upon in print. I only give it as a sort of caution not to press his beliefs too far.

Yours very truly,
OLIVER LODGE.

CORRESPONDENCE BETWEEN CROOKES AND LODGE

7, Kensington Park Gardens,
London, W.
Dec. 22nd, 1916.

My dear Lodge,

At a Séance I had with Mr. Hope,1 at Crewe on the 10th inst. I obtained a Spirit photograph of my dear departed. enclose you a print of it. I recognise it as very like what she was ten years ago, by comparing it with photos. taken by me about that date. There could not possibly be any trickery as the plate never left my possession and I did all the manipulation and developing myself. I am glad to say the possession of this definite proof of survival has done my heart much good.

At the same sitting a commencement of a message to you was given on a plate, but it was not easy to make out, and we could not get the remainder. At a subsequent sitting, I being absent, Miss Scatcherd got the (supposed) conclusion. She

[1] Hope was accused of fraudulent psychic photography practices by Harry Price and others, and Lodge was quite sure that photographic plates prepared by him for a test had been tampered with by Hope. On the other hand, Sir William Barrett and others were convinced they had obtained genuine results with him.

brought me the two negatives, and I enclose you prints of them which I hope you will be able to make out.

I wish you and Lady Lodge all possible happiness at Christmas, but judging from my own feelings it will not be a particularly happy time. I am having my two married sons and their families, and one of my grand-daughters, as well as my grand-son Willie, staying here for some days.

With kindest regards to your family and yourself,

I am, very sincerely yours,

WILLIAM CROOKES.

23rd December 1916.

My Dear Crookes,

I am amazed to hear that you have been to Crewe and have got results. I confess I have been extremely sceptical about that man Hope. I am impressed with your evidence of course but cannot say that I am convinced.

My only experience was some years ago, in Colley's[1] lifetime, when I supplied him with some specially wrapped-up plates, to be taken to Crewe and dealt with as he liked. They came back after a few months, the man Hope bringing them, and there were definite signs that they had been tampered with. That constitutes the ground of my suspicion. I have not myself been to Crewe, and have no wish to go, especially as I am not sufficiently a photographic expert. There are so many ways of faking plates that I could not myself trust photographic results.

That you have been convinced is one of the most extraordinary facts that has come to my knowledge in connexion with the Crewe phenomena. I feel sure that I may send the copies which you have so very kindly sent me to my friend Mr. Hill at Bradford, who is much interested in the subject, and from testimony that he has had, is more favourably impressed with the genuineness of the Crewe circle than I am.

Reciprocating all your kind wishes, and with affectionate regard, I am

Yours ever,

O.J.L.

1 Archdeacon Colley, one of the early discoverers of Hope; in 19o8 he was the centre of a controversy surrounding a Hope photograph said to be of the Archdeacon's mother.

7, Kensington Park Gardens,
London, W.
Dec. 27th, 1916.

My dear Lodge,

I consider the evidence I have of the genuineness of the Crewe photograph is unimpeachable. I went into the question of photographic trickery many years ago, and from confessions and admissions I had from tricksters I am acquainted with all the dodges possible. In my case, at Crewe the plate never left my possession except for the minute when Mr. Hope put it in and took it out of the camera. He could not possibly have done anything to deceive me. The picture I developed on the plate is not a fac-simile of any photograph ever taken of my Wife.

With all good seasonable wishes to you and yours,

believe me
affectionately yours,
WILLIAM CROOKES.

LETTER FROM CROOKES TO MISS ALICE BIRD

Jan. 24th, 1917.

My dearest Lallah,

Here are two letters from a lady whose name I cannot exactly read. She asks for one of the Spirit photographs. I do not like to send any copy to other than friends who knew my dear wife. I look upon the picture as a Sacred Trust, and do not like the idea that one is in stranger's hands, to be shown about to anyone as a curiosity.

If you know the lady sufficiently well to think she would keep it sacred, and would like me to send her a copy I will do SO.

I am so sorry the weather is too bad, and I am so ailing, to permit me to take a drive over to see you. I feel deeply sympathetic for you in your loss, for I have only to turn my thong t inward, to realise your grief.

The photograph must be a slight consolation, as it proves the continuity of the Self after passing through the change called Death.

"If one survives all survive."

I think I am getting a little better, but I feel the want of getting out and taking more exercise than I get in the house. I hope you are getting well again.

With much love, believe me,

Ever affectionately yours,

William Crookes.

ACCOUNT OF A MATERIALISATION GIVEN BY MISS F. R. SCATCHERD IN "SURVIVAL"[1]

It was in the late Sir William Crookes's little dark room, at 7, Kensington Park Gardens, that I finally verified certain surmises as to the use made of ectoplasm as a means of demonstrating survival.

No reference has been made to these latest experiments by Mr. Fournier d'Albe, in his 'Life of Sir William Crookes', except on one page and that reference is couched in vague and misleading terms.2

There were present Mrs. Z, the medium, Sir William and myself. Sir William having injured his leg by a fall, was in need of skilled attention. Otherwise his health was perfect. The nurse objected to his psychic activities, and together with others like-minded, made things difficult.

Once Sir William had arranged himself in his long chair, in the dark room, there was just space for two other persons to be seated, and no room for moving about without detection. One afternoon, after the lights were out and the phenomena had started, someone opened the door. A shaft of light fell full on the medium, who gave a gasp of agony, while I called out : `Shut the door. You are spoiling our experiment.'

But the door was not properly re-closed. By means of the crack of light I saw a bulky mass pass between Sir William and myself, partially obscuring the light, in places shutting it out completely. For a moment I thought the medium had left her chair, and stretching out my left hand, struck the knee of the entranced sensitive rigid in her place. At the same time a voice said:

[1] Putnam, 1924.

2 *Life of Sir William Crookes, p. 405.*

"You have hurt my medium. You have been told you should never touch her when we are working. She was already suffering on account of the light. No, do not close the séance. We will shield her from the light, and will do our best to carry on."

Sir William was literally enveloped in the ectoplasmic mist, *which* was apparently weightless, as he felt nothing, though it seemed to be resting on his injured leg. But the substance was so arranged as to cut off the light where it struck the medium, while leaving enough for me to see, to some extent, what was occurring.

Meanwhile a lively conversation was in progress between Sir William and the spirit of his late wife, who seemed to be most dexterous in managing the ectoplasmic column and manipulating it according to the slightest expressed wish of the sitters.

I did not see the formation of the hand that caressed her husband's forehead and greeted myself with a touch, but I heard Lady Crookes say, in answer to Sir William's regret that he could not see her (he had his back to the door), "I am here beside you, Willie dear. Listen while I carry the musical box round the room."

But I did perceive the upper end of the ectoplasmic column form itself into a rough gripping apparatus and heard it groping for the musical box at our feet.

By means of the bar of light I saw the musical box as it was whirled past the door and round and round Sir William's head

The box had been purchased for the purpose, a day or two earlier, at Gamage's, and was wound up and stopped at our request, or at that of the unseen intelligence in a way impossible to ourselves, on account of the nature of its mechanism. It was passed gently up and down his injured leg and most of the time two or more voices were speaking with Sir William and myself. But I concentrated on observing as far as possible the behaviour of the ectoplasm, and did not make my usual record of the conversations.

I had known Lady Crookes during her lifetime, and was now witness of her attempts to make use of ectoplasm as a means of demonstrating her survival, by actions and effects that needed only the register of the normal five senses for their perception.

The medium was ill for some time as a result of the shock caused by the sudden letting in of the light. Also where I had

placed my hand on her knee in order to ascertain whether she had left her chair, was a huge dark bruise which only gradually disappeared during the next few days, and was at first painful to the touch.

LETTER FROM CROOKES TO MISS SCATCHERD

7, Kensington Park
Gardens, London, W.11
11 May 17.

Dear Miss Scatcherd,

I hope that you and Mrs. Harris will be able to come and see me on Saturday at the usual time.

Yours very sincerely,
WILLIAM CROOKES.

[This handwritten letter is preserved in the College of Psychic Studies. Also there is a framed copy of the Crewe circle[1] photograph of Crookes and "spirit" of his dead wife, with slip pasted underneath typed by Crookes and signed by him, reading:

"Presented to the Ghost Club at the request of my Wife, speaking in the direct voice[2] after her entry into Spirit Life.

WILLIAM CROOKES."]

[1] This is a reference to William Hope.

[2] A direct voice utterance is one spoken not apparently through the medium's voice, but from somewhere outside the medium, and in the voice of the communicator rather than that of the medium.

THE LIFE OF CROOKES.

By Sir Oliver Lodge, F.R.S.

The Life of Sir William Crookes, O.M., F.R.S. By E. E. Fournier D'Albe, D.Sc., F.Inst.P. With a Foreword by Sir Oliver Lodge. Pp. xix + 413. (T. Fisher Unwin, Ltd.)

Whoever should have undertaken to write the *Life of Sir William Crookes* must have known that he was undertaking a difficult task. The amount of material available was enormous: for Crookes was a man who kept documents of every kind, probably in a state of orderly arrangement but multifarious in scope, and of very different intrinsic value. Along with papers of historical interest there were things little better than domestic memoranda, such as a list of things packed for a voyage, or a list of purchases made before coming home, or memoranda of the fees obtained for professional services, or correspondence about what sort of fee it would be reasonable to charge: any number of letters also, many of no particular interest, such as acceptances of invitations, or applications for tickets for ceremonials,—in fact, a good deal of what might legitimately be stigmatised as "rubbish." Beside all this, however, there were letters and controversies about the discovery of thallium, attempts to deal with the cattle plague, correspondence and controversy about the radiometer, speculations and predictions about wireless telegraphy, and dealings with diamond, gold, and radium; some of these being of considerable, some of small, interest. And it must have been very difficult to decide what to include.

One result, perhaps an unfortunate result, of the biographer's decision to include a large number of trivial documents is that methods of abstracting gold, in one form or another, loom rather large throughout the volume, and are continually occurring; sometimes in the domain of chemistry, sometimes approaching the realm of high finance, but rather frequently in

the petty details of business economy and company speculations. The biographer's aim no doubt is to produce a composite portrait, and not to slur over anything that throws light upon the character of his subject; but it may be held that the result is rather unfortunate. Trivial things occur in the lives of all men, but they are usually taken for granted, not emphasised or given a permanent position in biography; so that when they are emphasised, or even recorded, these details loom larger than they ought, and rather spoil the balance; not because they are anything more than commonplace, but just because they are commonplace.

What had to be brought out was that Crookes, by his own exertions, did achieve a sufficient fortune to enable him to devote the main part of his life to science. Details of the fees which he received in consultation or in legal procedure, after he had established his reputation, are utterly unimportant and should be out of the picture; they distract attention from the real business of life. Financial matters which lead to disaster, or which lead on the other hand to increased facility for work, are bound to be included; but unnecessary details about minor things of that sort are abhorrent.

The main outlines of what one would look for in the biography of a man of science, after dates and parentage or ancestry and educational opportunities, are such as these:—the circumstances which led him to take up science as a profession or a hobby, some account of his early struggles and gaining of recognition, and then a vivid representation, with contemporary documents, illustrating the main work of his life. For the carrying out of such a task in the case of William Crookes Dr. Fournier d'Albe seemed eminently suitable; for he had graduated, so to speak, either literally or metaphorically, in both physics and psychics, and was sufficiently acquainted with chemistry to appreciate the work of a great chemist. But in spite of a brave, and no doubt earnest, effort to overcome the difficulties of the task, the result must be regarded as somewhat disappointing: the outcome strikes a reader who knew Crookes and his work as rather less than fair to his memory. Superlatives are introduced from time to time, no doubt; some more, some less appropriate; but it can in no sense be called a panegyric. Possibly the biographer had not

much personal acquaintance with the subject of his memoir in his study and laboratory. Undoubtedly it must be very difficult to form an estimate of a man from a miscellaneous array of letters and documents. From that point of view, the wonder is that it has been done so well.

This reviewer's own personal estimate of Crookes is sufficiently indicated in the introduction which he wrote for Dr. Fournier's book; and it is unnecessary to add to that. He would only like to testify of his own knowledge, what the book perhaps sufficiently indicates, that the mutual devotion of Crookes and his wife can hardly be exaggerated; that they lived to celebrate the sixtieth anniversary of their union; and that when she died he was inconsolable until he obtained what he considered proof of her continued companionship.

Some remarks must now be made concerning a few of the chemico-physical and psychic details recorded in this volume. On the whole Crookes was more of a chemist than a physicist. His training had been that of a chemist; and although he made important discoveries in physics, he generally stated them in such a way as to arouse opposition and controversy. Controversy indeed ruled throughout his life, sometimes taking a painful form. One of the most painful controversies must have been that at the Royal Institution with Sir James Dewar. It is mentioned in this review only to bring forward a privately known proof of Crookes's magnanimity: for when, soon afterwards, it was proposed at the Royal Society that its highest honour, the Copley Medal, should be given to Dewar, Crookes, a previous recipient of that medal, came out of his comparative retirement and earnestly supported the proposition; which, needless to say, was carried.

The chief discoveries associated with Crookes's name are the new element Thallium,—discovered spectroscopically and exhibited at the 1862 Exhibition, though even about that there was much vexatious controversy; the radiometer,—again with much disagreement about its mode of action; the spinthariscope,—a useful and convenient and, as it turns out, important outcome of experiments on radium; and, chief of all, radiant matter or cathode rays or "matter in a fourth state,"—the foundation of a whole new branch of physics, and

the early beginning of the later discovery by others of the electron. It will probably be held by posterity that the electrical work in high vacua, part of which was summarised and demonstrated in his discourse to the British Association at Sheffield on August 22nd, 1879, marks the climax of Crookes's life and achievement.

The discourse itself was rather brilliant, and passages from it are quoted in this volume, but the experiments in high vacua, by which it was illustrated, were far more brilliant; and it is difficult to over-estimate their great and epoch-making importance. From a sort of toy, exhibited at scientific soirées, the vacuum-tube rose to a position of extraordinary dignity and usefulness, and may be said to dominate the physics of the latter portion of the nineteenth and the early part of the twentieth century.

Members of the S.P.R. will be able to form a good estimate of the main outlines of Crookes's work by reading the obituary notice by a contemporary man of science, Sir William Barrett, in *Proceedings*, (Vol. XXXI., pp. 12 to 29), with a portrait and with a useful appendix giving a list of the contributions to the S.P.R. by Sir William Crookes.

So far, we have said not a word about that painful and unpopular episode or period in Crookes's life wherein he took full advantage of exceptional opportunities offered him for the examination of supernormal phenomena, during the years 1871 to 1874, a period of great importance to the disciples of psychic science, and one in connexion with which they will always hold Crookes and his pioneering work in high honour and remembrance. But, as often happens to investigators into unpopular novelties, the work brought upon himself, as far as the public were concerned, only ridicule, painful controversy, and condemnation. He entered upon the subject with a light heart, he left it with a heavy one. He imagined that by careful experimenting, and by frankness, he would disarm hostility and convince the scientific world. Others have been under a similar impression, both before and since! We now know, or at least the writer does, that Crookes observed many things which, however incredible, were true; and that, by aid of the unusual powers of D. D. Home

and Florence Cook, he had opportunities for investigation denied to most of us. But the citadel of orthodoxy was too strong; Crookes failed to storm it; it is intact to this day, though breaches have been made in its wall, or at any rate some of the garrison have deserted. But for the rest of his life—though he would willingly speak privately on the subject, and though his convictions were quite unaltered,—he no longer thought it necessary to incur the odium and the numerous disabilities incurred by pressing the subject on his scientific confrères. So, after a vigorous and stormy few years, he went on with what he considered his scientific work proper, and therein achieved so much that, in spite of the hostility he had aroused, scientific honours and medals flowed upon him; and ultimately he was even elected, though not without some searchings of heart, to the Presidency of the Royal Society.

Undoubtedly the researches of Crookes into psycho-physical phenomena must have been among the material which was in the minds of the founders of the S.P.R., when in the late seventies and early eighties, Sir William Barrett (the only remaining living founder) discussed with Henry Sidgwick, Frederic Myers, and Edmund Gurney, together with Alfred Russel Wallace and probably some others, the prospects of a society which might be founded to take up that large and neglected field of investigation to the very existence of which the long established scientific societies were blind and deaf when not contemptuous. Fortunately, or so it seems, the first fruits of the Society, and indeed of Barrett's own work on the subject, lay in the comparatively innocuous and less sensational direction of the kind of thought transference to which Myers gave the name "telepathy." Crookes indeed, later in life, rather regretted that his good fortune had not led him to *approach* the subject from that end. At the same time the more physical end seemed natural to an experimenter in chemistry and physics: and he probably had too little training in psychology and literature to be able to make the headway which the co-operators who founded the Society did undoubtedly make. Nevertheless, physical phenomena are among those occurrences which had been testified to again and again; and they were by no means excluded from the purview of the new Society. Indeed a special committee was initiated from

the first to try to carry on and complete the investigation begun by the Dialectical Society in the previous decade. And if opportunity had offered, they would doubtless have been willing to continue and develop the observations of Crookes.

Even telepathy, however, would not have been aeeeptable to the scientific magnates of that day. There are still some to whom it is not acceptable now. And Barrett eneountered hostility when, in 1876, hc tried to read a paper on the subject before a scientific body, and offered to make demonstration of the telepathic powers possessed by members of a family with whom he himself had made careful observations.

The best known of Crookes's experiments, and those whieh ɔaused the most outcry and derision, were the remarkable series of experiments in full blown materialisation,—for a ɜeientific treatment of which the time was evidently not yet ripe. The Florence Cook and Katie King episodes are not ully described in this volume. A fuller extraet from the ecords of the time is given by Dr. Fournier d'Albe himself in his ɔook, published by Longmans in 1908, *New Light on Immorality*, Chapters 2 and 3 of Part III.,—a book which is well worth referring to; though it eontains statements by Mrs. Ross Church (Florence Marryat) whieh cannot be eredited, and o some of which Crookes himself later gave unqualified denial. See *Proc. S.P.R.*, XII., p. 268.)

Crookes was the victim not so much of controversy as of ıeer denuneiation; his most voluble antagonist being Dr. W. B. arpenter, one of the learned physiologists of the time, who as subsequently Registrar of the University of London,—a ıan of weight and influenec, but, as is now seen, of far less ıan seientific caution and fairmindedness. Another antagonist as the eminent man of science Sir Charles Wheatstonc, to hose inventions the early progress of telegraphy owed so much. n the other hand there were one or two who had already ɜcome convinced of some of the faets, not only the famous ologist, A. R. Wallace, but thc well-known eleetricians Crom-ell, and his brother S. A. Varley; who indeed eneouraged ookes to take up the subjeet, and assisted him in some of s early experiments with Home,—making, among others, an ɜctrieal test which, though not really more conclusive than

mechanical ones, might appear more conclusive to the public mind. S. A. Varley was a man for whose contributions to cable telegraphy Lord Kelvin in later life frequently asserted that he had not received a due meed of recognition and approbation. That by the way; and only as showing, to a generation which has now nearly forgotten these workers, that their experimental ability was by no means to be despised.

There were others, of course, not so exactly in the line of scientific ancestry, who countenanced these phenomena and were fully convinced of their reality. And perhaps it was partly due to association with these that Crookes—already recognised as a discoverer—conceived that when he found himself able to add his own first-hand testimony, and utilise the exceptionally favourable opportunities which then prevailed, his word would be received and opposition would crumble. Wisely, he made selection of what he thought would be palatable material he did not seek to interest the officers of the Royal Society—chief among whom was the world-famous mathematical physicist Sir George Gabriel Stokes—in any of the strange and ultra-normal physiological and apparitional phenomena which he had witnessed; but he did seek to make a demonstration of the powers of Home, reduced to their bare elements, by means of a very simple mechanical arrangement for proving the existence of an unknown force, which he called "psychic force." This experiment he begged both Stokes and Wheatstone to come to see; but they declined, saying that if the arrangements were really as he described them, the thing could not possibly work. To this Crookes replied that he did not say the thing was possible or likely, but only that it happened. He succeeded in getting Dr. Huggins, the astronomer, to see the apparatus working, and also to be present while an accordion, held in Home's hand by its dummy end in a cage, with its keyboard hanging down, moved about and sounded its notes. But Sir William Huggins refrained from *conspicuously* championing the phenomenon, and preferred for a considerable time to remain anonymous, at least so far as the public were concerned. He, however, was not one of the officials of the Royal Society at the time, though subsequently in due time, he became its President.

All this, with many other details, appears more or less

clearly in Chapter XII. of the book under review,—a long chapter dealing with this phase in Crookes's life,—and it is unnecessary to say more about it here; except regretfully to say that the author's treatment in a few particulars is not altogether fair to Crookes's memory, and not such as Crookes in his lifetime would have approved. Certain metrical statements by Crookes are stigmatised as erroneous, while the still more erroneous statements of objectors are cited without correction as if they were true. There must have been a certain amount of carelessness in this part of the book; and the genuineness of the whole affair appears to be left under a cloud of suspicion which is very far from being justified by the statements themselves, and which by no means correctly represents the attitude of Crookes himself at any part of his life.

In this review, therefore, it seems desirable to call attention to the particularly simple experiment above mentioned, and point out some of the gratuitous errors which, judging from the text, were made at that time by critics of importance. Unimportant and anonymous critics did not hesitate to ridicule the whole thing; that is only to be expected, and is of no moment, but what responsible scientific authorities say, at any period, is historically important, and, if uncorrected, is naturally taken as accurate. The following remarks, therefore, may serve as a summary and supplement to this part of the book.

Crookes arranged an apparatus of the simplest possible kind in order to verify that an unknown force actually operated, and in some sense to record and measure its amount. For this purpose he arranged a horizontal mahogany board three feet long, $8\frac{1}{2}$ inches wide, and 1 inch thick; with one edge supported on the edge of a table, and the other end suspended by a registering spring-balance, hung from a firm tripod stand. The medium was seated at the table and his hands were placed lightly on the fixed or fulcrum end. The result was that after a time the board tilted down, and the balance at the other end indicated that its spiral spring had been stretched as if loaded by a weight, sometimes as much as from 3 to 6 lbs. He also made a registering apparatus, with smoked glass moved by clockwork, so that a trace should be recorded, indicating by objective and permanent record the amount of the force at different times. All this was published

in *The Quarterly Journal for Science* for July 1871, and continued in October 1871, with confirmatory testimony by Sir William Huggins and Serjeant Cox. The testimony was later reproduced, with an appendix of correspondence illustrating the controversial reception the experiment met with, in a book called *Researches in Spiritualism*, which appears to be now out of print.

These experiments are referred to in the volume now under review, page 218 and thereabouts. To avoid the suspicion that the medium, when touching the board, might trespass beyond the fulcrum and be surreptitiously pressing with exceptional violence, so as to produce a force comparable to a pound weight or more at the far end of the lever, Crookes marked the position of Home's fingers on the board, and subsequently placed on or near the fulcrum a vessel of water, into which the medium was to dip his fingers without touching the board at all. And to avoid accidentally or purposely touching the rim or sides of this vessel, he arranged above it another water container, a sort of copper bowl, fixed to an independent support; the bowl being (unfortunately and perhaps unnecessarily) perforated at the bottom so that water in the bowl communicated with the water in the vessel below; and the medium only dipped his fingers into this upper copper bowl, shown in an illustration on page 220 of the book. But still the spring balance at the far end of the lever, now untouched except through water, exhibited a force of nearly a pound.

The most absurd arguments were used against these experiments. For instance, a writer in the *Journal of the Franklin Institute* says that, though Crookes's evidence practically shows that the board apparently weighed only 6 lbs., it ought, from its size and from the specific gravity of mahogany, to weigh 13 lbs.; he therefore indicates a suspicion that the board was a trick board, supplied by the medium! To which Crookes replied that the board had been in his possession for years, that it had already formed part of several previous pieces of apparatus, and that, whatever it *ought* to weigh, it did actually weigh only 6 lbs.

Another objection, more responsibly made by Sir Charles Wheatstone, was that a water connection was no guarantee

against the exertion of force, since—so he argues—if only 3 cubic inches of water were displaced by the fingers, it would by hydrostatic laws be equivalent to a pressure of from 12 to 13 ozs., or nearly a pound. This arithmetical error is reproduced on p. 219 of *The Life of Crookes* without correction. As a matter of fact the weight of three cubic inches of water is only an ounce and threequarters! This matter, though apparently trivial, is historically important because a special effort was being made to interest the Royal Society. In its early days the opportunity for witnessing such an "absurd" experiment would have been welcomed by the Society; but now, in its later dignity and immense knowledge, it is repelled by the apparently impossible. Crookes is accused by his biographer of having, in this crucial instance, made a *faux pas*, with serious consequences to Science. It is not really so: though in his original description he probably had a momentary lapse, and had expressed himself with less than meticulous accuracy. He was not a professor of Physics. When he came to reply to objections, he might have admitted the hydrostatic argument and at the same time attacked the erroneous arithmetic; but, instead, he contented himself with a demonstration that as a matter of fact no appreciable deflexion of the lever could normally be caused in that way, even when the bowl was not exactly over the fulcrum. Crookes expressly states that dipping his whole hand to the full extent in the upper bowl of water did not produce the least appreciable action on the balance at the other end of the lever. This is in accordance with common sense. The whole weight of a man *on the fulcrum* would not account for the stretching of the spring. That the weight of whatever water was displaced would give some extra pressure on the fulcrum is true enough, but that this effect would be very small is obvious from the picture of the apparatus, and nothing appreciable could normally reach the far end of the lever.

Wheatstone's concluding comment, when this was pointed out, was that it appeared to him contrary to all analogy that any force, acting according to physical laws, should produce the forcible depression of a lever by acting on its fulcrum! To which Crookes replied that he entirely agreed; that that

was the whole gist of the experiment, and the only reason he regarded it as worthy of attention.

The episode illustrates one of the difficulties which is bound to be encountered by investigators of novel physical phenomena. If a new kind of force is exerted, the experiments are almost bound to be surprising and, so to speak, incredible—so incredible that responsible leaders in science may be unwilling to subject themselves to what they regard as the farce of attempted demonstration. As in Galileo's time, they may refuse to look through the telescope; or, if they do, may regard it as a deceptive instrument. Many Continental investigators, and some in this country, are now inclined to suppose that the force in these and other more striking instances of telekinesis is due to or is associated with the mechanical intervention or employment of an invisible previously unknown material, probably emanating from the medium, in the form of what we now call ectoplasm,—a form of substance which was then not recognised or perhaps suspected by anyone. Nothing but direct observation and instrumental confirmation can establish such things as realities; and in the absence of theory experiment must always be scrutinised with exceptional severity. A plausible theory need not jump into existence at the same time as new facts are observed; but until there is *some* guiding theory or clue the facts seem detached from organised science, and are rebutted and disbelieved on theoretical grounds. Disbelief is only natural, and its foundation in common sense is rather like a modified version of David Hume's arguments against miracles, viz. that it is more likely that a witness should lie than that a miracle should happen; because the one is consonant with human experience and the other is not. That is quite true; but if the thing really does happen, and if it can be shown contemporaneously to happen, the argument has no weight; the facts, when proven, are themselves an expansion of human experience; and they clearly establish the need for overhauling and enlarging our theoretical foundations. Things that are unlikely may nevertheless be true. Our knowledge of nature is not so extensive that we are able to say beforehand what is possible and what is not possible in a novel region of enquiry. That is where even Faraday—that prince of investigators—made, in an *obiter*

dictum, one of his few mistakes. The history of science is too much disfigured by the premature rejection and contempt with which novelties have often been received. They are accepted, in the long run, by some subsequent generation; but the responsible generation living at the time does not rise to the height of its opportunities. Contemporary men of science unfortunately write themselves down, not only as ignorant, which was inevitable, but as blind and prejudiced and sadly bigoted: though it is true that in their lifetime their contemptuous attitude gains them credit for robust common sense and sanity. They are wise, therefore, in their day and generation.

It is singular, and perhaps depressing, that the obscurantist attitude of theologians in the past had been so amply imitated by the pontiffs and high priests of science in the recent present. They still oppose their admirable theories and great knowledge of the universe to resist the incursion of fresh information; they oppose observed facts on *a priori* and utterly inadequate grounds. No one ought to consider his knowledge of the universe so complete and final as to be competent to negative careful testimony based on critical and responsible experiment and observation, especially if the observer has already proved his competence in more recognised branches of knowledge. Explanatory hypotheses may be criticised severely, but the facts demand attention.

In the light of our present or subsequent knowledge, historical rejections of truth, and inability to recognise the value of testimony, or even to accept a chance of being convinced by actual experience, tend to arouse our impatience; but there is some excuse. Most of the orthodox facts of to-day had to encounter similar opposition at their entry, and were at one time heterodox. It has been said that even scientific fact is not generally accepted until it becomes a habit: and, as illustrating pardonable and natural scientific scepticism, it may be instructive and helpful to quote here from an old letter from a scientific friend about Crookes's experiments, preserved and cited with approbation by Crookes himself:—

"Any *intellectual* reply to your facts I cannot see. Yet it is a curious fact that even I, with all my tendency and desire to believe spiritualistically, and with all my faith in your power of observing and your thorough truthfulness,

feel as if I wanted to see for myself; and it is quite painful to me to think how much more proof I want. Painful, I say, because I see that it is not reason which convinces a man, unless a fact is repeated so frequently that the impression becomes like a habit of mind, an old acquaintance, a thing known so long that it cannot be doubted. This is a curious phase of man's mind, and it is remarkably strong in scientific men,—stronger than in others, I think. For this reason we must not always call a man dishonest because he does not yield to evidence for a long time. The old wall of belief must be broken down by much battering."

The fact that Crookes fully adhered to his exceptional experiences, throughout his life, is sufficiently plain to members of the S.P.R. from his "Notes of Séances with D. D. Home," written for the *Proceedings* of the S.P.R. in 1889 (see Vol. VI., page 98 *et seq*). Also from his holding the Presidential Chair of the Society for three years, 1896-1899, and from his Presidential Address to the Society in 1897 (see *Proc.* Vol. XII., page 338).

While, later still, in the critical and quite unprivileged atmosphere of the British Association, when he was President of that body at its Bristol meeting in September 1898, the concluding portion of his address speaks of "one interest" which to him was "the weightiest and the farthest reaching of all," and continues:—

"Thirty years have passed since I published an account of experiments tending to show that outside our scientific knowledge there exists a Force exercised by intelligence differing from the ordinary intelligence common to mortals. . . . To ignore the subject would be an act of cowardice—an act of cowardice I feel no temptation to commit. . . . There is nothing for the investigator to do but to go straight on. . . . to follow the light wherever it may lead. . . . I have nothing to retract. I adhere to my already published statements. Indeed, I might add much thereto. I regret only a certain crudity in those early expositions which, no doubt justly, militated against their acceptance by the scientific world."

Though several letters about the preparation of this Address are printed in the volume under review, pp. 353-370, it seems

legitimate to add, now, that while drafting the address Crookes was also in correspondence with F. W. H. Myers; and we may trace Myers's hand in its final and ante-penultimate paragraphs. I know that Crookes accepted these suggestions with joy, and rejected several other eloquent literary passages with regret. It is only fair to his memory to quote here the final paragraph; though it is among those quoted in the book, and although Members of the S.P.R. will find the whole of the psychic portion of this British Association Address easy to refer to in *Proc.* XIV., pp. 2 to 5.

"In old Egyptian days a well known inscription was carved over the portal of the temple of Isis: 'I am whatever hath been, is, or ever will be; and my veil no man hath yet lifted.' Not thus do modern seekers after truth confront Nature—the word that stands for the baffling mysteries of the universe. Steadily, unflinchingly, we strive to pierce the inmost heart of Nature, from what she is to re-construct what she has been, and to prophesy what she yet shall be. Veil after veil we have lifted, and her face grows more beautiful, august, and wonderful, with every barrier that is withdrawn."

Appendix II

Extract from an Address before the British Association in 1898

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AT the annual assembly of that most representative body, the British Association, in 1898, Sir William Crookes again declared himself upon the subject of his researches.

Since his first utterance, in 1874, many doubters had arisen who had declared that the scientist had swerved from his former course and no longer believed in the genuineness of the manifestations witnessed. His words before the British Association leave no doubt in the mind.

Sir William, as President of the British Association, addressed its Annual Meeting at Bristol, and concluded his remarks by the following statement:—

These, then, are some of the subjects, weighty and far-reaching, on which my own attention has been chiefly concentrated. Upon one other interest I have not yet touched—to me the weightiest and the farthest reaching of all.

No incident in my scientific career is more widely known than the part I took many years ago in certain psychic researches. Thirty years have passed since I published an account of experiments tending to show that outside our scientific knowledge there exists a Force exercised by intelligence differing from the ordinary intelligence common to mortals. This fact in my life is, of course, well understood by those who honoured me with the invitation to become your President. Perhaps among my audience some may feel curious as to whether I shall speak out or be silent. I elect to speak, although briefly. To enter at length on a still debatable subject would be unduly to insist on a topic which—as Wallace, Lodge and Barrett have already shown—though not unfitted for discussion at these meetings, does not yet enlist the interest of the majority of my scientific brethren. To ignore the subject would be an act of cowardice—an act of cowardice I feel no temptation to commit.

To stop short in any research that bids fair to widen the gates of knowledge, to recoil from fear of difficulty or adverse criticism, is to bring reproach on Science. There is nothing for the investigator to do but to go straight on, "to explore up and down, inch by inch, with the taper of his reason"; to follow the light wherever it may lead, even should it at times resemble a will-o'-the-wisp. I have nothing to retract. I adhere to my already published statements. Indeed, I might add much thereto. I regret only a certain crudity in those early expositions which, no doubt justly, militated against their acceptance by the scientific world. My own knowledge at that time scarcely extended beyond the fact that certain phenomena new to science had assuredly occurred, and were attested by my own sober senses, and, better still, by automatic record. I was like some two-dimensional being who might stand at the singular point of a Riemann's surface, and thus find himself in infinitesimal and inexplicable contact with a plane of existence not his own.

I think I see a little farther now. I have glimpses of something like coherence among the strange elusive phenomena; of something like continuity between those unexplained forces and laws already known. This advance is largely due to the labours of another Association of which I have also this year the honour to be President—the Society for Psychical Research. And were I now introducing for the first time these inquiries to the world of science I should choose a starting-point different from that of old. It would be well to begin with *telepathy*; with the fundamental law, as I believe it to be, that thoughts and images may be transferred from one mind to another without the agency of the recognised organs of sense—that knowledge may enter the human mind without being communicated in any hitherto known or recognised ways.

Although the enquiry has elicited important facts with reference to the Mind, it has not yet reached the scientific stage of certainty which would entitle it to be usefully brought before one of our Sections. I will, therefore, confine myself to pointing out the direction in which scientific investigation can legitimately advance. If telepathy take place we have two physical facts—the physical change in the brain of A, the suggester, and the analogous physical change in the brain of B, the recipient of the suggestion. Between these two physical events there must exist a train of physical causes. Whenever the connecting sequence of intermediate causes begins to be revealed the enquiry will then come within the range of one of the Sections of the British Association. Such a sequence can only occur through an intervening medium. All the phenomena of the universe are presumably in some way continuous, and it is unscientific to call in the aid of mysterious agencies when with every fresh advance in knowledge it is shown that ether vibrations have powers and attributes abundantly equal to any demand—even to the transmission of thought. It is supposed by some physiologists that the essential cells of nerves do not actually touch, but are separated by a narrow gap which widens in sleep while it narrows almost to extinction during mental activity. This condition is so singularly like that of a Branly or Lodge coherer as to suggest a further analogy. The structure of brain and nerve being similar, it is conceivable there may be present masses of such nerve coherers in the brain whose special function it may be to receive impulses brought from without through the connecting sequence of ether waves of appropriate order of magnitude. Rontgen has familiarised us with an order of vibrations of extreme minuteness compared with the smallest waves with which we have hitherto been acquainted, and of dimensions comparable with the distances between the centres of the atoms of which the material universe is built up; and there is no reason to suppose that we have here reached the limit of frequency. It is known that the action of thought is accompanied by certain molecular movements in the brain, and here we have physical vibrations capable from their extreme minuteness of acting direct on individual molecules, while their rapidity approaches that of the internal and external movements of the atoms themselves.

Confirmation of telepathic phenomena is afforded by many converging experiments, and by many spontaneous occurrences only thus intelligible. The most varied proof, perhaps, is drawn from analysis of the sub-conscious workings of the mind, when these, whether by accident or design, are brought into

conscious survey. Evidence of a region, below the threshold of consciousness, has been presented, since its first inception, in the *Proceedings of the Society for Psychical Research*; and its various aspects are being interpreted and welded into a comprehensive whole by the pertinacious genius of F. W. H. Myers. Concurrently, our knowledge of the facts in this obscure region has received valuable additions at the hands of labourers in other countries. To mention a few names out of many, the observations of Richet, Pierre Janet and Binet (in France), of Breuer and Freud (in Austria), of William James (in America) have strikingly illustrated the extent to which patient experimentation can probe sub-liminal processes, and thus can learn the lessons of alternating personalities and abnormal states. Whilst it is clear that our knowledge of subconscious mentation is still to be developed, we must beware of rashly assuming that all variations from the normal waking condition are necessarily morbid. The human race has reached no fixed or changeless ideal; in every direction there is evolution as well as disintegration. It would be hard to find instances of more rapid progress, moral and physical, than in certain important cases of cure by suggestion—again to cite a few names out of many—by Liebeault, Bernheim, the late Auguste Voisin, Berillon (in France), Schrenck-Notzing (in Germany), Forel (in Switzerland), van Eeden (in Holland), Wetterstrand (in Sweden), Milne-Bramwell and Lloyd Tuckey (in England). This is not the place for details, but the *vis medicatrix* thus evoked, as it were, from the depths of the organism, is of good omen for the upward evolution of mankind.

A formidable range of phenomena must be scientifically sifted before we effectually grasp a faculty so strange, so bewildering, and for ages so inscrutable as the direct action of mind on mind. This delicate task needs a rigorous employment of the method of exclusion—a constant setting aside of irrelevant phenomena that could be explained by known causes, including those far too familiar causes, conscious and unconscious fraud. The enquiry unites the difficulties inherent in all experimentation connected with *mind*, with tangled human temperaments and with observations dependent less on automatic record than on personal testimony. But difficulties are things to be overcome even in the elusory branch of research known as Experimental Psychology.

It has been characteristic of the leaders among the group of enquirers constituting the Society for Psychical Research to combine critical and negative work with work leading to positive discovery. To the penetration and scrupulous fair-mindedness of Professor Henry Sidgwick and of the late Edmund Gurney is largely due to the establishment of canons of evidence in psychical research, which strengthen while they narrow the path of subsequent explorers. To the detective genius of Dr. Richard Hodgson we owe a convincing demonstration of the narrow limits of human continuous observation.

It has been said that “Nothing worth the proving can be proved, nor yet dis-proved.” True though this may have been in the past, it is true no longer. The Science of our century has forged weapons of observation and analysis by which the veriest tyro may profit. Science has trained and fashioned the average mind into habits of exactitude and disciplined perception, and in so doing has fortified itself for tasks higher, wider and incomparably more wonderful than even the wisest among our ancestors imagined. Like the souls in Plato’s myth that follow the chariot of Zeus, it has ascended to a point of vision far above the earth. It is, henceforth, open to Science to transcend all we now think we know of matter, and to gain new glimpses of a profounder scheme of Cosmic Law.

An eminent predecessor in this Chair declared that “by an intellectual necessity he crossed the boundary of experimental evidence, and discerned in that Matter, which we in our ignorance of its latent powers, and notwithstanding our professed reverence for its Creator, have hitherto covered with opprobrium the potency and promise of all terrestrial life.” I should prefer to reverse the apophthegm, and to say that in Life I see the promise and potency of all forms of Matter.

In old Egyptian days a well-known inscription was carved over the portal of the temple of Isis: “I am whatever hath been, is, or ever will be; and my veil no man hath yet lifted.” Not thus do modern seekers

after truth confront Nature—the word that stands for the baffling mysteries of the Universe. Steadily, unflinchingly, we strive to pierce the inmost heart of Nature, from what she is to re-construct what she has been, and to prophesy what she yet shall be. Veil after veil we have lifted, and her face grows more beautiful, august and wonderful with every barrier that is withdrawn.

Appendix III

Independent Testimony as to the Mediumship of Florence Cook

BY SIR ARTHUR CONAN DOYLE

The most connected account of the mediumship of Miss Florence Cook, apart from that of Professor Crookes, is to be found in Miss Florence Marryat's "There is No Death," a most interesting book of practical experiences, which is now published in a very cheap edition (Rider & Co.). From it I make the following extracts. Miss Marryat, it should be added, was an excellent witness, all of whose statements have stood the test of time. At the time when Miss Marryat (Mrs. Ross-Church) met the medium, the latter had become Mrs. Elgie Corner.

"The first time," she writes, "that I ever met Florence Cook was in Mr. Dunphy's private house, when my little daughter appeared through her.

"On that occasion, as we were sitting at supper after the seance—a party of perhaps thirty people—the whole dinner-table, with everything upon it, rose bodily in the air to a level with our knees, and the dishes and glasses swayed about in a perilous manner, without, however, coming to any permanent harm. I was so much astonished at, and interested by, what I saw that evening that I became most anxious to make the personal acquaintance of Miss Cook. She was the medium for the celebrated spirit, 'Katie King,' of whom so much has been believed and disbelieved, and the seances she gave at her parents' house in Hackney for the purpose of seeing this figure alone, used to be crowded by the cleverest and most scientific men of the day, Serjeants Cox and Ballantyne, Mr. S. C. Hall, Mr. Crookes, and many others being on terms of the greatest intimacy with her. Mr. William Harrison, of the 'Spiritualist' paper, was the one to procure me an introduction to the family and an entrance to the seances, for which I shall always feel grateful to him.

"The order of these seances was always the same. Miss Cook retired to a back room, divided from the audience by a thin damask curtain, and presently the form of 'Katie King' would appear dressed in white and walk out amongst the sitters in gaslight, and talk like one of themselves. Florence Cook, as I mentioned before, is a very small, slight brunette, with dark eyes and dark curly hair, and a delicate aquiline nose. Sometimes 'Katie' resembled her exactly; at others, she was totally different. Sometimes, too, she measured the same height as her medium; at others she was much taller. I have a large photograph of 'Katie' taken under limelight. In it she appears as the double of Florrie Cook, yet Florrie was looking on whilst the picture was taken. I have sat for her several times with Mr. Crookes, and seen the tests applied which are mentioned in his book on the subject. I have seen Florrie's dark curls *nailed down to the floor* outside the curtain, in view of the audience, whilst 'Katie' walked about and talked with us. I have seen Florrie placed on the scale of a weighing-machine constructed by Mr. Crookes for the purpose, behind the curtain, whilst the balance remained in sight. I have seen under these circumstances that the medium weighed eight stone in a normal condition, and that, as soon as the materialised form was fully developed, the balance ran up to four stone. Moreover, I have seen both Florrie and 'Katie' together on several occasions, so I can have no doubt on the subject that they were

two separate creatures. Still, I can quite understand how difficult it must have been for strangers to compare the strong likeness that existed between the medium and the spirit, without suspecting that they were one and the same person. One evening 'Katie' walked out and perched herself upon my knee. I could feel she was a much plumper and heavier woman than Miss Cook, but she wonderfully resembled her in features, and I told her so. 'Katie' did not seem to consider it a compliment. She shrugged her shoulders, made a grimace, and said, 'I know I am, I can't help it, but I was much prettier than that in earth life. You shall see some day—you shall see.' After she had finally retired that evening she put her head out at the curtain again, and said, with the strong lisp she always had, 'I want Mrs. Ross-Church.'

"I rose and went to her, when she pulled me inside the curtain, when I found it was so thin that the gas shining through it from the outer room made everything in the inner quite visible. 'Katie' pulled my dress impatiently, and said, 'Sit down on the ground,' which I did. She then seated herself in my lap, saying, 'And now, dear, we'll have a good 'confab,' like women do on earth.' Florence Cook, meanwhile, was lying on a mattress on the ground close to us, wrapped in a deep trance. 'Katie' seemed very anxious I should ascertain beyond doubt that it was Florrie. 'Touch her,' she said. 'Take her hand, pull her curls. Do you see that it is Florrie lying there?' When I assured her I was quite satisfied there was no doubt of it, the spirit said, 'Then look round this way, and see what I was like in earth life.' I turned to the form in my arms, and what was my amazement to see a woman fair as the day, with large grey or blue eyes, a white skin and a profusion of golden red hair. 'Katie' enjoyed my surprise, and asked me, 'Ain't I prettier than Florrie now?' She then rose and procured a pair of scissors from the table and cut off a lock of her own hair and a lock of the medium's, and gave them to me. I have them safe to this day. One is almost black, soft and silky the other coarse golden red. After she had made me this present, 'Katie,' said, 'Go back now, but don't tell the others to-night, or they'll all want to see me.' On another very warm evening she sat on my lap amongst the audience, and I felt perspiration on her arm. This surprised me, and I asked her if, for the time being, she had the veins, nerves and secretions of a human being; if blood ran through her body and she had a heart and lungs. Her answer was, 'I have everything that Florrie has.'

"On that occasion also she called me after her into the back room, and, dropping her white garment, stood perfectly naked before me, 'Now,' she said, 'you can see that I am a woman.' Which, indeed, she was, and a most beautifully-made woman, too, and I examined her well, whilst Miss Cook lay beside us on the floor. Instead of dismissing me this time, 'Katie' told me to sit down by the medium, and having brought me a candle and matches, said I was to strike a light as soon as she gave three knocks, as Florrie would be hysterical on awaking and need my assistance. She then knelt down and kissed me, and I saw she was still naked. 'Where is your dress, Katie?' I asked. 'Oh, that's gone,' she said: 'I've sent it on before me.' As she spoke thus, kneeling beside me, she rapped three times on the floor. I struck the match almost simultaneously with the signal, but as it flared up 'Katie King' was gone like a flash of lightning, and Miss Cook, as she had predicted, awoke with a burst of frightened tears, and had to be soothed into tranquillity again. On another occasion 'Katie King' was asked at the beginning of the seance by one of the company to say *why* she could not appear in the light of more than one gas burner. The question seemed to irritate her, and she replied, 'I have told you all, several times before, that I can't stay under a searching light. I don't know *why*, but I can't, and if you want to prove the truth of what I say, turn up all the gas and see what will happen to me. Only remember, if you do there will be no seance to-night, because I shan't be able to come back again, and you must take your choice.'

"Upon this assertion it was put to the vote if the trial should be made or not, and all present (Mr. S. C. Hall was one of the party) decided we would prefer to witness the effect of a full glare of gas upon the materialised form than to have the usual sitting, as it would settle the vexed question of the necessity of gloom (if not darkness) for a materialising seance for ever. We accordingly told 'Katie' of our choice, and she consented to stand the test, though she said afterwards we had put her to much pain. She took up her station against the drawing-room wall, with her arms extended as if she were crucified. Then three

gas-burners were turned on to their full extent, in a room about sixteen feet square. The effect upon 'Katie King' was marvellous. She looked like herself for the space of a second only, then she began gradually to melt away. I can compare the dematerialisation of her form to nothing but a wax doll melting before a hot fire. First the features became blurred and indistinct; they seemed to run into each other. The eyes sunk in the sockets, the nose disappeared, the frontal bone fell in. Next the limbs appeared to give way under her, and she sank lower and lower on the carpet like a crumbling edifice. At last there was *nothing but her head* left above the ground; then a heap of white drapery only, which disappeared with a whisk, as if a hand had pulled it after her, and we were left staring by the light of three gas-burners at the spot on which 'Katie King' had stood.*****

"She was always attired in white drapery, but it varied in quality. Sometimes it looked like longcloth; at others like mull muslin or jaconet; oftenest it was a species of thick cotton net. The sitters were much given to asking 'Katie' for a piece of her dress to keep, as a souvenir of their visit, and when they received it would seal it up carefully in an envelope and convey it home, and were much surprised, on examining their treasure, to find it had totally disappeared.

"'Katie' used to say that nothing material about her could be made to last without taking away some of the medium's vitality and weakening her in consequence. One evening, when she was cutting off pieces of her dress rather lavishly, I remarked that it would require a great deal of mending. She answered 'I'll show you how we mend dresses in the Spirit World.' She then doubled up the front breadth of her garment a dozen times and cut two or three round holes in it. I am sure, when she let it fall again, there must have been thirty or forty holes, and 'Katie' said, 'Isn't that a nice cullender?'

"She then commenced, whilst we stood close to her, to shake her skirt gently about, and in a minute it was as perfect as before, without a hole to be seen. When we expressed our astonishment, she told me to take the scissors and cut off her hair. She had a profusion of ringlets falling to her waist that night. I obeyed religiously, hacking the hair wherever I could, whilst she kept on saying, 'Cut more! cut more! not for yourself, you know, because you can't take it away!'

"So I cut off curl after curl, and as fast as they fell to the ground *the hair grew again upon her head*. When I had finished, 'Katie' asked me to examine her hair to see if I could detect any place where I had used the scissors, and I did so without any effect. Neither was the severed hair to be found. It had vanished out of sight. 'Katie' was photographed many times by limelight by Mr. Alfred Crookes, but her portraits are all too much like her medium to be of any value in establishing her claim to a separate identity. She had always stated she should not appear on this

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***** Some discredit was cast upon this account, and even so high an authority as Sir Oliver Lodge was misled by the assertion of Sir William that he did not witness it. An examination of Miss Marryat's evidence will show that she never claimed that he did.

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earth after the month of May, 1874, and accordingly, on the 21st she assembled her friends to say 'Good-bye' to them, and I was one of the number. 'Katie' had asked Miss Cook to provide her with a large basket of flowers and ribbons, and she sat on the floor and made up a bouquet for each of her friends to keep in remembrance of her.

"Mine, which consists of lilies of the valley and pink geranium, looks almost as fresh to-day, nearly seventeen years after, as it did when she gave it to me. It was accompanied by the following words, which 'Katie' wrote on a sheet of paper in my presence:—

'From Annie Owen de Morgan (*alias* "Katie") to her friend, Florence Marryat Ross-Church. With love. *Pensez a moi*.—*May* 21*st*, 1874.'

"The farewell scene was as pathetic as if we had been parting with a dear companion by death. 'Katie' herself did not seem to know how to go. She returned again and again to have a last look, especially at Mr. Crookes, who was as attached to her as she was to him. Her prediction has been fulfilled, and from that day Florence Cook never saw her again nor heard anything about her. Her place was shortly filled by another influence, who called herself 'Marie,' and who danced and sung in a truly professional style, and certainly as Miss Cook never either danced or sung. I should not have mentioned the appearance of this spirit, whom I only saw once or twice, excepting for the following reason. On one occasion Miss Cook (then Mrs. Corner) was giving a public seance at the rooms of the National British Association of Spiritualists, at which a certain Sir George Sitwell, a very young man, was present, and at which he declared that the medium cheated, and that the spirit 'Marie' was herself, dressed up to deceive the audience. Letters appeared in the newspapers about it, and the whole press came down upon Spiritualists, and declared them all to be either knaves or fools. These notices were published on the morning of a day on which Miss Cook was engaged to give another public seance, at which I was present. She was naturally very much cut up about them. Her reputation was at stake; her honour had been called into question, and being a proud girl, she resented it bitterly. Her present audience was chiefly composed of friends, but, before commencing, she put it to us whether, whilst under such a stigma, she had better not sit at all. We, who had all tested her and believed in her, were unanimous in repudiating the vile charges brought against her, and in begging the seance should proceed. Florrie refused, however, to sit unless someone remained in the cabinet with her, and she chose me for the purpose. I was, therefore, tied to her securely with a stout rope, and we remained thus fastened together for the whole of the evening. Under which conditions 'Marie' appeared, and sung and danced outside the cabinet, just as she had done to Sir George Sitwell, whilst her medium remained tied to me. So much for men who decide a matter before they have sifted it to the bottom. Mrs. Elgie Corner has long since given up mediumship, either private or public, and lives deep down in the heart of Wales, where the babble and scandal of the city affect her no longer. But she told me, only last year, that she would not pass through the suffering she had endured on account of Spiritualism again for all the good this world could give her."

One point which will strike the critic in this account is the remark that sometimes the spirit form would exactly resemble the medium, while at other times it would be totally different. Every experienced investigator has had the same result. Working with Miss Bessinet, I have frequently seen faces which were identical with her own, and afterwards those which could not possibly have been hers—two appearing sometimes at the same moment. The natural explanation would be that it actually is the medium's face, and if she be in a trance state it is possible that such an explanation would be innocent as well as true, the forces which controlled her using her as best they could when the conditions did not admit of materialisation. Sometimes the medium's own form may be used with ectoplasmic additions. Thus the great German authority, Dr. Schrenck-Notzing, says, in talking of one of the photographs of "Eva," taken with ectoplasmic drapery around her:*****

"The photograph is interesting as throwing a light on the genesis of the so-called 'transfiguration,' i.e., the medium takes upon herself the part of the spirit, endeavouring to dramatise the character of the person in question by clothing herself in the materialized fabrics. This transition stage is found in nearly all materializing mediums. The literature of the subject records a large number of attempts at the exposure of mediums thus impersonating 'spirits,' e.g., that of the medium Bastian by the Crown Prince Rudolph, that of Crookes' medium, Miss Cook; that of Mrs. d'Esperance, etc. In all these cases the medium was seized, but the fabrics used for masking immediately disappeared, and were not afterwards found."

The case of the alleged exposure of Mrs. Corner seemed to have been exactly as Dr. Schrenck-Notzing describes, and such incidents bringing undeserved reproach upon the medium will always occur if the sitters do not take the precaution of securely fastening him or her. Experienced mediums are aware

of this, and take precautions accordingly. The writer can well remember having a sitting with the famous medium, Evan Powell, in the privacy of his own bedroom. Powell insisted upon being tied up, and on the writer remarking that such a precaution was unnecessary, since long experiment had quite convinced him of his honesty, he answered: "I must insist upon it as a protection for myself. How can I answer for what I may do when I am unconscious in a trance? I might unconsciously wander round the room, and you, finding me doing so, would lose confidence in me for ever." This saying throws a strong light upon such cases as the alleged exposure of Mrs. Corner by Major Sitwell and others. In that case all present testified to the appearance of white garments, while the medium, when seized, had nothing of the sort.

A CONAN DOYLE

***** "The Phenomena of Materialisation" (English translation), page 97.

PROCEEDINGS

OF THE

Society for Psychical Research

PART LXXVII.

JULY, 1919.

I.

PRESIDENTIAL ADDRESS.

Delivered on April 11th, 1919,

BY THE RIGHT HON. LORD RAYLEIGH, O.M., F.R.S.

BEFORE entering upon the matters that I had intended to lay before you, it is fitting that I should refer to the loss we have sustained within the last few days in the death of Sir William Crookes, a former President of the Society during several years from 1896-1899, and a man of world-wide scientific reputation. During his long and active life he made many discoveries in Physics and Chemistry of the first importance. In quite early days his attention was attracted by an unknown and brilliant green line in the spectrum, which he succeeded in tracing to a new element named Thallium, after its appearance. Later he was able so to improve vacua as to open up fresh lines of enquiry with remarkable results in more than one direction. The radiometer, a little instrument in which light, even candle-light, or ordinary day-light, causes the rotation of delicately suspended vanes, presents problems even yet only partially solved. And his discoveries relating to electric discharge in high vacua lie near the foundation of the modern theories of electricity as due to minute charged particles called electrons, capable of separation from ordinary

chemical atoms, and of moving with speeds of the order of the speed of light. One is struck not only by the technical skill displayed in experiments more difficult at the time they were made than the younger generation of workers can easily understand, but also by the extraordinary instinct which directed Crookes' choice of subjects. In several cases their importance was hardly realised at the time, and only later became apparent.

I shall have occasion presently to notice in some little detail his early "Notes on Phenomena called Spiritual." It was these that attracted my own attention to the subject. In 1889 he published further "Notes of Séances with D. D. Home" in Vol. VI. of our *Proceedings*. I fancy that he was disappointed with the reception that his views met with, having been sanguine enough to expect that he would obtain the same credence when he wrote on psychical matters as when he was dealing with Physics or Chemistry. In later years I understand he did not often introduce the subject, but when questioned was firm that he had nothing to retract. One would give much to know whether this attitude is still maintained.

Any hesitation that I may have felt in undertaking the honourable office to which you have called me was largely due to the fact that I have no definite conclusions to announce, and that such experiences as I have had were long ago, and can hardly now carry weight as evidence to anyone but myself. But I have always taken an interest in questions such as those considered by the Society, and I may perhaps as well give a short account of what I have seen, for it will at any rate help to explain my attitude and serve as a foundation for comment.

I may begin with what is now called hypnotism. This is an old story; but many have forgotten, or never realised, the disbelief which was general in the fifties of the last century both on the part of the public and of medical men. As to the former, reference may be made to *Punch*,[1] and as to the latter

[1] Vol. XXIV., p. 120 (1853), *Lecturer on Electro-biology*, "Now, Sir! you can't jump over that stick." *Subject*, "Jump? Eh! Ugh! Lor bless me, jump? No, I know I can't—never could jump—Ugh!" (Thunders of Applause from the Gentlemen in the cane-bottom chairs—[*i.e.* believers]).

I suppose there can be no doubt, although of course there were distinguished exceptions. At the present day orthodox medical opinion has so far shifted its ground as to claim for the profession control of what was formerly dismissed as impossible and absurd—certainly a less unreasonable position.

It was some ten or eleven years from the date of *Punch's* cartoon that I witnessed in a friend's rooms at Cambridge an exhibition of the powers of Madame Card. I think eight or ten of us were tried, including myself. We were made to gaze for a time at a "magnetic" disc; afterwards she made passes over our closed eyes, and finally defied us to open them. I and some others experienced no difficulty; and naturally she discarded us and developed her powers over those—about half the sitters—who had failed or found difficulty. Among the latter were personal friends of my own and two well-known University athletes. One was told that he could not give his name, another that he would have to cross the room towards her when she beckoned, and so on. In spite of obvious efforts to resist her influence they had to obey. In conversation afterwards they assured me that they could not help it; and indeed they made such fools of themselves that I had no difficulty in believing them. From that evening I have never felt any doubt as to the possibility of influencing unwilling minds by suggestion; and I have often wished that on other occasions, where dubious phenomena were in question, some of which I shall presently refer to, conviction one way or the other had followed this precedent. I ought to add that, although stories were afloat to that effect, I never saw the influence of Madame Card conveyed otherwise than by word or gesture.

After this experience I was not disinclined to believe that what was, or at any rate had recently been, orthodox opinion might be quite wrong, and accordingly became interested in what I heard from friends of the doings of Home and other so-called mediums. Some of the stories could, as it seemed, be explained away only on the supposition of barefaced lying, or more charitably as the result of hallucination, whether self-induced, or due to the suggestion and influence of others. The possibility of the latter view cannot be left out of account, but I have never seen anything to show that it has the

remotest application to my own experience or that of the friends with whom I have co-operated.

The interest that I felt was greatly stimulated by the appearance of Sir W. Crookes' "Notes of an Enquiry into the Phenomena called Spiritual during the years 1870-73."[1] I was acquainted with some of the author's scientific work, and knew that he was a skilful experimenter and likely to be alive to the precautions required in order to guard against sense illusions. Presumably also he would feel the difficulty of accepting conclusions so much out of harmony with ordinary and laboratory experience. If heavy tables in a dining-room can leave the floor, how is it that in the laboratory our balances can be trusted to deal with a tenth of a milligram?

I have lately read over again Sir W. Crookes' article, and I do not wonder at the impression it produced upon me. I am tempted to quote one or two passages against which I find my old pencil marks. Under the heading—The Appearance of Hands, either Self-luminous or Visible by Ordinary Light, he writes, "I have retained one of these hands in my own, firmly resolved not to let it escape. There was no struggle or effort made to get loose, but it gradually seemed to resolve itself into vapour, and faded in that manner from my grasp." I believe that the rationalistic explanation is that the hand was an inflated glove, like a rubber balloon, from which the air gradually leaked away, but I gave Sir W. Crookes credit for being able to retain the rubber.

Another incident of an entirely different character is thus described. "A lady was writing automatically by means of the planchette. I was trying to devise a means of proving that what she wrote was not due to 'unconscious cerebration.' The planchette, as it always does, insisted that, although it was moved by the hand and arm of the lady, the *intelligence* was that of an invisible being who was playing on her brain as on a musical instrument, and thus moving her muscles. I therefore said to this intelligence, 'Can you see the contents of this room?' 'Yes,' wrote the planchette. 'Can you see to read this newspaper'? said I, putting my finger on a copy of the *Times*, which was on the table behind me, but without looking at it. 'Yes,' was the reply of the planchette.

[1] *Quarterly Journal of Science*, Jan. 1874.

'Well,' I said, 'if you can see that, write the word which is now covered by my finger, and I will believe you.' The planchette commenced to move. Slowly and with great difficulty, the word 'however' was written. I turned round, and saw the word 'however' was covered by the tip of my finger."

"I had purposely avoided looking at the newspaper when I tried this experiment, and it was impossible for the lady, had she tried, to have seen any of the printed words, for she was sitting at one table, and the paper was on another table behind, my body intervening."

The two mediums whose names are mentioned in the article, and with whom most of the observations were made, are Home and Miss Fox, afterwards Mrs. Jencken. A highly desirable characteristic of Home's mediumship was the unusual opportunity allowed to the sense of sight. Home always objected to darkness at his séances. "Indeed," says Sir William Crookes, "except on two occasions . . . everything that I have witnessed with him has taken place in the light."

I found (and indeed still find) it difficult to accept what one may call the "knave and fool theory" of these occurrences; but failing that, it would seem to follow that one must admit the possibility of much that contrasts strongly with ordinary experience, and I was naturally anxious to obtain first hand information on which I could form an independent judgment. Home was no longer available, but I was able to obtain the co-operation of Mrs. Jencken, who stayed in my country house as guest during two or three visits extending altogether, I suppose, over fourteen days or so. She was accompanied by a nurse and baby, and for a small part of the time by Mr. Jencken, who seemed curiously slow to understand that we had to regard him as well as his wife with suspicion, when I explained that we could not attach importance to séances when both were present. It may be well to add that they received nothing beyond the usual courtesy and entertainment due to guests.

The results were upon the whole disappointing, and certainly far short of those described by Sir W. Crookes. Nevertheless there was a good deal not easy to explain away. Very little